

1                   IN THE UNITED STATES DISTRICT COURT  
2                   FOR THE EASTERN DISTRICT OF TEXAS  
3                   MARSHALL DIVISION  
4  
5                   OPTIS WIRELESS TECHNOLOGY,         ) (   CIVIL ACTION NO.  
6                   LLC, OPTIS CELLULAR                 ) (   2:19-CV-66-JRG  
7                   TECHNOLOGY, LLC, PANOPTIS         ) (    
8                   PATENT MANAGEMENT, LLC,          ) (    
9                   UNWIRED PLANET, LLC, UNWIRED     ) (    
10                  PLANET INTERNATIONAL LIMITED,     ) (    
11                  PLAINTIFFS,                         ) (    
12                  VS.                                 ) (    
13                  ) (                                 ) (   MARSHALL, TEXAS  
14                  ) (                                 ) (   AUGUST 6, 2020  
15                  APPLE INC.,                         ) (   1:03 P.M.  
16                  DEFENDANTS.                         ) (    
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11                   TRANSCRIPT OF JURY TRIAL

12                   AFTERNOON SESSION

13                   BEFORE THE HONORABLE JUDGE RODNEY GILSTRAP

14                   UNITED STATES CHIEF DISTRICT JUDGE

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14 (Proceedings recorded by mechanical stenography, transcript  
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## 01:03:44 1 P R O C E E D I N G S

01:03:44 2 (Jury out.)

01:03:44 3 COURT SECURITY OFFICER: All rise.

01:03:45 4 THE COURT: Be seated, please.

01:07:15 5 Mr. Mueller, are you prepared to call your next  
01:07:24 6 witness?

01:07:24 7 MR. MUELLER: We are, Your Honor.

01:07:25 8 THE COURT: All right. Is there anything we need  
01:07:27 9 to take up, counsel, before I ask the jury to return to the  
01:07:29 10 courtroom?

01:07:30 11 MR. MUELLER: Not for Apple, Your Honor.

01:07:33 12 MR. SHEASBY: Nothing for Plaintiffs, Your Honor.

01:07:36 13 THE COURT: Let's bring in the jury, please,  
01:07:38 14 Mr. Elliott.

01:07:43 15 COURT SECURITY OFFICER: All rise.

01:07:59 16 (Jury in.)

01:08:00 17 THE COURT: Welcome back from lunch, ladies and  
01:08:02 18 gentlemen. Please have a seat.

01:08:03 19 Defendant, call your next witness.

01:08:06 20 MR. MUELLER: Thank you, Your Honor. Apple calls  
01:08:10 21 Dr. Kaushik Josiam, and Mr. Summersgill will do the  
01:08:13 22 examination.01:08:13 23 THE COURT: All right. If the witness will come  
01:08:17 24 forward and be sworn, please.

01:08:18 25 (Witness sworn.)

01:08:28 1 THE COURT: Please come around, sir, have a seat  
01:08:30 2 at the witness stand.

01:08:32 3 All right. Mr. Summersgill, you may proceed.

01:08:48 4 MR. SUMMERSGILL: Thank you, Your Honor.

01:08:48 5 KAUSHIK JOSIAM, DEFENDANT'S WITNESS, SWORN

01:08:48 6 DIRECT EXAMINATION

01:08:50 7 BY MR. SUMMERSGILL:

01:08:50 8 Q. Good afternoon. Could you please introduce yourself to  
01:08:53 9 the jury and tell them a little bit about yourself?

01:08:55 10 A. My name is Kaushik Josiam. I'm married to my beautiful  
01:09:00 11 wife, Arbi, for the past 10 years, and I have a  
01:09:06 12 three-year-old son, Ari, at home.

01:09:09 13 Q. And what is your educational background?

01:09:10 14 A. I received my Bachelor's in electronics and  
01:09:18 15 communications engineering from Bangalore University in  
01:09:21 16 India.

01:09:21 17 And after I got my Master's degree, I came here to  
01:09:25 18 the United States to pursue my graduate studies. I got my  
01:09:30 19 Master's and Ph.D., both in electrical engineering, from  
01:09:34 20 Southern Methodist University.

01:09:35 21 Q. And where did you live when you attended SMU?

01:09:38 22 A. I lived in Dallas, Texas.

01:09:40 23 Q. How long did you live in the Dallas area?

01:09:42 24 A. I would say I lived about 13 years in Dallas area.

01:09:47 25 Q. And where do you live now, Dr. Josiam?

01:09:50 1 A. I live now in San Diego, California.

01:09:53 2 Q. Where do you work, Dr. Josiam?

01:09:56 3 A. I work at Apple.

01:09:57 4 Q. What's your position at Apple?

01:10:00 5 A. I am a wireless systems engineer in Apple. What I do

01:10:05 6 is I design baseband chips that connect our devices to the

01:10:12 7 cellular network.

01:10:13 8 Q. And what is a baseband chip?

01:10:17 9 A. The baseband chip is a computer on the phone that

01:10:23 10 enables the phone to connect to the cellular network

01:10:29 11 wirelessly.

01:10:30 12 Q. And what are your responsibilities as an engineer in

01:10:36 13 the group that designs these baseband chips?

01:10:37 14 A. My responsibilities are to work with hardware designers

01:10:45 15 to design the circuitry that make up the baseband chip, and

01:10:49 16 I also work with the software engineers who write the

01:10:53 17 software that goes -- that runs on the baseband chip.

01:10:55 18 Q. Now, what companies designed the baseband chips that

01:11:00 19 are in the Apple products at issue?

01:11:02 20 A. Well, I -- I worked for Intel, which supplied baseband

01:11:09 21 chips that went into the Apple devices, which made those

01:11:14 22 baseband chips, and I believe Qualcomm also supplied those

01:11:19 23 chips into the Apple devices.

01:11:20 24 Q. And what is Intel?

01:11:22 25 A. Intel is this pioneering computer company that makes --

01:11:32 1 that has made many, many generations of these computer  
01:11:35 2 chips.

01:11:38 3 Their chips -- computer processors, or chips as we  
01:11:41 4 call them, go into 80 -- 85 percent of all devices, all  
01:11:45 5 laptops, computers worldwide. And they had a division that  
01:11:51 6 designed baseband chips, and I worked at that division.

01:11:55 7 Q. And were you at Intel just before your time at Apple?

01:11:58 8 A. Yes, sir.

01:11:58 9 Q. And what specifically did you do while you were at  
01:12:02 10 Intel?

01:12:03 11 A. My job was to design these baseband chips that --  
01:12:11 12 that -- that kind of help connects the devices to the  
01:12:14 13 cellular network.

01:12:15 14 Q. Now, what is the reason that you came over from Apple  
01:12:19 15 to Intel?

01:12:20 16 A. Well, about a year ago, Intel sold their division that  
01:12:25 17 makes the baseband chip to Apple, and it was at that time  
01:12:31 18 that I thought it was a great opportunity for me to come to  
01:12:36 19 Apple and to continue my work designing baseband chips, and  
01:12:40 20 also work at a company that makes these amazing products  
01:12:45 21 that people enjoy using world over.

01:12:48 22 Q. And how many other baseband chip engineers came over  
01:12:51 23 from Intel to Apple?

01:12:54 24 A. I would say about 2,000 engineers came -- came over  
01:12:59 25 from Intel to Apple.

01:13:00 1 Q. And where did you work before Intel?

01:13:04 2 A. I worked at Samsung.

01:13:08 3 Q. And what work did you do at Samsung?

01:13:09 4 A. I worked as a researcher in the -- in the research and

01:13:18 5 development unit in -- in Samsung.

01:13:20 6 Q. Now, Dr. Josiam, how long have you worked, in total,

01:13:24 7 designing baseband chips?

01:13:26 8 A. Well, even when I was working in Samsung -- even -- I

01:13:31 9 was doing research, but -- so it was related to the

01:13:35 10 baseband chip development, and to get -- that would be all

01:13:39 11 my career, working life, that would be 13 years now.

01:13:43 12 Q. Now, you have received any patents for your work

01:13:46 13 designing baseband chips?

01:13:47 14 A. Yes, sir. I have lost count. I think I would have

01:13:51 15 about a little more than 40 patents, if I'm not wrong.

01:13:55 16 Q. Dr. Josiam, may I ask you some questions about your

01:13:59 17 work designing the Intel chips that are in the Apple

01:14:04 18 products at issue?

01:14:05 19 A. Yes.

01:14:05 20 Q. What Apple products contained the baseband chips, the

01:14:08 21 Intel baseband chips at issue?

01:14:11 22 A. These are products that help the devices connect the

01:14:16 23 phone to the cellular network. That would be the iPhone,

01:14:21 24 the iPad, and the Apple Watch.

01:14:24 25 Q. And where are the technologies that you've designed

01:14:28 1 located within the Apple products?

01:14:31 2 A. They would be inside -- in the -- inside the products  
01:14:36 3 in the baseband chips.

01:14:38 4 MR. SUMMERSGILL: Your Honor, may I approach the  
01:14:40 5 witness?

01:14:41 6 THE COURT: You may.

01:14:43 7 Q. (By Mr. Summersgill) Dr. Josiam, I've handed you  
01:14:53 8 what's been marked DDX-42 and DDX-43.

01:14:58 9 And I'll start with DDX-42. Could you tell us  
01:15:04 10 what that is?

01:15:05 11 A. This is an iPhone, iPhone 11.

01:15:11 12 Q. And, Dr. Josiam, where in the iPhone 11 would I find  
01:15:15 13 the baseband chip?

01:15:16 14 A. This will be inside of the iPhone.

01:15:20 15 Q. And using that iPhone, could you show the jury where  
01:15:24 16 the baseband chip is?

01:15:25 17 A. Yes, I can. The iPhone here has the screen slightly  
01:15:36 18 removed, so I'm able to remove the screen.

01:15:38 19 And once I remove the screen, I see a lot of  
01:15:42 20 components. There is -- there is a battery, and there is  
01:15:44 21 this chip -- there's a first circuit board that contains  
01:15:47 22 the main processor, and then, right at the bottom, if I can  
01:15:52 23 get this off, I have -- I have this other circuit board,  
01:15:59 24 and the baseband chip is this black rectangle here that you  
01:16:03 25 see on the circuit board.

01:16:06 1 Q. Now -- and what is DDX-43?

01:16:10 2 A. Okay. This is the baseband chip that was on that  
01:16:20 3 circuit board.

01:16:21 4 Q. Now, what is a cellular -- what did you mean by  
01:16:25 5 cellular network?

01:16:27 6 A. Cellular network is -- is a network that is being  
01:16:35 7 deployed that allows devices to be able to communicate  
01:16:39 8 wirelessly. They don't have to be connected to a wire. So  
01:16:43 9 you can be completely wireless, you can be on the move, you  
01:16:47 10 can make phone calls, send messages, do everything that you  
01:16:51 11 do on a computer, except not connected to a wire.

01:16:56 12 And -- and the -- the network enables that  
01:16:59 13 connection with the Internet for -- from the computer and  
01:17:04 14 carries wireless phone -- wireless as well.

01:17:09 15 Q. And what makes up the cellular -- or a cellular  
01:17:12 16 network?

01:17:13 17 A. A cellular network is -- is -- is a -- it contain --  
01:17:19 18 the phone connects to something called the base station,  
01:17:23 19 and after -- from the base station, everything is a wired  
01:17:26 20 network that goes on the background network. And, yeah, so  
01:17:29 21 there are many such base stations around the -- around the  
01:17:34 22 world, and they help connect the phones to the cellular  
01:17:37 23 network.

01:17:38 24 Q. Now, Dr. Josiam, using your monitor in front of you,  
01:17:43 25 could you explain at a high level what happens when the

01:17:47 1 Apple products send and receive messages over the cellular  
01:17:52 2 network?

01:17:53 3 A. Yes, I can.

01:17:54 4 Okay. Yeah. So let's say I'm here in Texas today  
01:18:04 5 and I want to make a phone call to my wife, and I'll open  
01:18:09 6 up my device and dial her number.

01:18:12 7 When I do that, what happens is the signals from  
01:18:15 8 my phone wirelessly travel over-the-air and con -- and are  
01:18:24 9 transmitted to a node nearby called the base station. This  
01:18:28 10 is the cell tower that our phones connect to.

01:18:32 11 And once the signal arrives at the base station,  
01:18:34 12 it is then forwarded to wires to a network, which is --  
01:18:40 13 which connect -- which figures out where my wife's phone is  
01:18:44 14 in California and forwards the signal to the base  
01:18:52 15 station -- over wire to the base station to which it's  
01:18:55 16 connected.

01:18:56 17 And once the signal gets there, it's then  
01:18:58 18 transmitted wirelessly to her phone, which then rings. And  
01:19:03 19 once she picks up, this connection is established, and we  
01:19:07 20 can have a conversation.

01:19:08 21 And this is at the heart of everything -- every  
01:19:11 22 communication that goes on from the device to the cellular  
01:19:13 23 network.

01:19:13 24 Q. Now, how many operations do the baseband chips need to  
01:19:19 25 be able to perform so that the Apple products can do what

01:19:22 1 you just demonstrated?

01:19:23 2 A. The baseband chips perform many, many functionalities.

01:19:29 3 And to perform those functionalities, they do millions of

01:19:34 4 calculations every second.

01:19:36 5 Q. Now, what are the specific functionalities of the Intel

01:19:40 6 baseband chips that you've worked on that are at issue in

01:19:43 7 this case?

01:19:43 8 A. There are three -- three issues.

01:19:48 9 The first one is transmitting data and control

01:19:53 10 information over something called a PUSCH channel, the

01:20:01 11 PUSCH channel.

01:20:02 12 The second one is transmitting -- is interpreting

01:20:06 13 the fields of control information that is received at the

01:20:11 14 phone from the base station on something called the PDCCH

01:20:17 15 control channel.

01:20:17 16 And the third one is transmitting a sequence from

01:20:22 17 the phone to the base station on something called the RACH,

01:20:28 18 the random access channel.

01:20:34 19 Q. Now, where would you look to see how those

01:20:36 20 functionalities work within the baseband chips?

01:20:38 21 A. You would have to look at the source code, sir.

01:20:40 22 Q. And what is source code?

01:20:42 23 A. Source code is -- is a computer program. It is -- it

01:20:48 24 is a set of instruction that is tells the -- that tells the

01:20:52 25 baseband chip, the computer in this case, to -- to what --

01:20:56 1 what -- what it needs to do to be able to connect -- to  
01:21:00 2 able to connect and operate with a cellular network.  
01:21:03 3 Q. And where does that source code run?  
01:21:06 4 A. The source code runs on the baseband chip.  
01:21:09 5 Q. Now, Dr. Josiam, what generations of cellular  
01:21:14 6 technologies do the Intel baseband chips that you've worked  
01:21:17 7 on support?  
01:21:18 8 A. The -- the -- the Intel baseband chips support all  
01:21:24 9 generations of cellular technologies that have been  
01:21:28 10 deployed, which would mean we support GSM, which was the  
01:21:32 11 first generation that carried voice, and then EDGE, all the  
01:21:36 12 way up to 2G, 3G, 4G/LTE -- LTE networks. And I'm right  
01:21:45 13 now working on the 5th generation of cellular networks.  
01:21:49 14 Q. Now, does your work involve the LTE standard?  
01:21:55 15 A. Yes, sir.  
01:21:56 16 Q. And how has your work involved the LTE standard?  
01:22:01 17 A. The LTE standard has -- is -- is essentially a set of  
01:22:08 18 documents -- a set of specifications that tell the phone  
01:22:13 19 what to do, what it -- what it needs to do in order to  
01:22:19 20 operate with the cellular network.  
01:22:22 21 And in designing the -- in designing the baseband  
01:22:25 22 chips, I need to know what -- what the LTE standard is.  
01:22:30 23 That's how it's informed.  
01:22:32 24 Q. And what is your goal when you're designing a chip that  
01:22:35 25 can operate on the LTE standard?

01:22:36 1 A. The -- the LTE standard tells us what the baseband chip  
01:22:47 2 needs to do in order to connect and operate with a  
01:22:50 3 cellular -- LTE network, cellular network. But it doesn't  
01:22:53 4 tell us how we must do it.

01:22:57 5 And we -- so we don't -- we -- it -- it doesn't  
01:23:02 6 tell us how we must do it, so it is up to us as baseband  
01:23:09 7 engineers to be able to come up with various matters, use  
01:23:15 8 our experience and -- and also -- and also -- use our  
01:23:21 9 experience and also come up with our own ideas that --  
01:23:24 10 that -- to ensure that our baseband chips operate in the  
01:23:28 11 most efficient way with the LTE network.

01:23:31 12 Q. Now, Dr. Josiam, who designed the Intel baseband chips  
01:23:35 13 that are used in the Apple products?

01:23:39 14 A. Well, the -- designing baseband chips is a team sport.  
01:23:46 15 And, although I'm the only person present here, there are  
01:23:50 16 thousands of engineers, like me, working back in designing  
01:23:55 17 these chips.

01:23:55 18 Q. And -- and what has been your role in designing and  
01:23:59 19 working on the Intel baseband chips used in the Apple  
01:24:02 20 products?

01:24:03 21 A. My role has been to design -- is to -- is to -- is to  
01:24:09 22 star -- design the baseband chip from the ground up, which  
01:24:13 23 means I work with hardware engineers to build the circuits  
01:24:18 24 that make up the baseband chip, and I also work with  
01:24:22 25 software engineers that write the code -- source code that

01:24:27 1 runs the baseband chips.

01:24:28 2 So I -- I do -- I -- I basically worked with all

01:24:34 3 other engineers to get this baseband chip running.

01:24:37 4 Q. And how many other baseband chip engineers were

01:24:40 5 involved in designing these chips, besides yourself?

01:24:44 6 A. There are -- yeah, I mean, the -- in designing the

01:24:48 7 baseband chips, like I said, it's a team sport. We have

01:24:53 8 thousands of engineers. And -- and it goes from concept

01:25:01 9 to -- to testing, and literally thousands of engineers are

01:25:06 10 basically working on this --

01:25:07 11 Q. And could you --

01:25:08 12 A. -- to get this working.

01:25:09 13 Q. And could you please describe the process of designing

01:25:13 14 a baseband chip?

01:25:13 15 A. Sure, I can. So what -- in designing a baseband chip,

01:25:21 16 the LTE standard tells us what -- what -- what the baseband

01:25:27 17 chip needs to be able to do in order to connect and operate

01:25:29 18 with the network, but it doesn't tell us how.

01:25:31 19 So -- and then we have our own set of

01:25:36 20 requirements. Requirements are determined by -- there are

01:25:39 21 three major requirements that drive us. We want to be able

01:25:43 22 to operate with the smallest amount of power, which means

01:25:47 23 that it enables a really long battery life for all our

01:25:52 24 customers.

01:25:52 25 The second one is we want to occupy the smallest

01:25:56 1 amount of area in the phone.

01:25:58 2 And the third one is we want to be able to perform  
01:26:01 3 in the best possible way. Our performance has to be the  
01:26:06 4 best out in the market.

01:26:08 5 So we have these three requirements, we have the  
01:26:11 6 LTE standard, and nobody tells us how to do it. It's a  
01:26:14 7 whiteboard. And it takes engineers like me working in  
01:26:18 8 teams, coming up with multiple ideas, and iterating over a  
01:26:24 9 lot of ideas and spending a lot of late nights figuring out  
01:26:28 10 the best possible solution, the most efficient solution  
01:26:31 11 that goes into the phone.

01:26:32 12 THE COURT: Dr. Josiam, would you slow down a  
01:26:35 13 little bit, please?

01:26:37 14 THE WITNESS: Sure.

01:26:38 15 THE COURT: Speak slower, please, sir.

01:26:40 16 THE WITNESS: Sure.

01:26:41 17 THE COURT: Thank you.

01:26:41 18 Q. (By Mr. Summersgill) And how long does it take to  
01:26:43 19 design a baseband chip?

01:26:45 20 A. It takes three to five years from concept to a  
01:26:50 21 completely operational baseband chip that goes into a  
01:26:53 22 product.

01:26:54 23 Q. Now, may I ask you some questions about the first  
01:27:02 24 technology area that you told us you worked on in the Intel  
01:27:06 25 chips, this process of sending signals on the PUSCH

01:27:10 1 channel?

01:27:12 2 A. Yes, sir.

01:27:12 3 Q. First, would you please explain to the jury what PUSCH

01:27:17 4 means?

01:27:18 5 A. Yes. PUSCH stands for Physical Uplink Shared Channel.

01:27:25 6 And this is the channel that the phone uses to send signals

01:27:31 7 from the phone, which is a data from the phone, to the base

01:27:35 8 station that it's connected to.

01:27:37 9 Q. And what kinds of information are sent on the PUSCH

01:27:41 10 channel, the P-U-S-C-H channel, to the Apple products?

01:27:45 11 A. There -- their -- primarily, PUSCH channel transmits

01:27:54 12 data from our phone. This would be email, messages. It

01:27:59 13 could be web browser requests that we sent from the phone

01:28:02 14 or voice calls. But, additionally, we also send control

01:28:07 15 information from the phone to the base station.

01:28:08 16 Q. And what is the control information that you mentioned?

01:28:13 17 A. The control information is -- is the information that

01:28:18 18 allows the base station to send data from the base station

01:28:25 19 on the -- to the phone. The base station needs to know how

01:28:29 20 good the channel is, what -- so -- so that it can package

01:28:36 21 data in the correct way so that the phone can receive it.

01:28:38 22 So it is these kind of information called the

01:28:43 23 control information that the phone helps the base station

01:28:45 24 to know so that it can send data from the base station to

01:28:47 25 the phone.

01:28:49 1 MR. SUMMERSGILL: Now, I'll ask that we pull up  
01:28:52 2 DTX-82.

01:28:55 3 Q. (By Mr. Summersgill) And, Dr. Josiam, it's also at  
01:28:58 4 Tab 1 in your binder.

01:29:00 5 MR. SUMMERSGILL: And if we could turn to Page 32.

01:29:03 6 Q. (By Mr. Summersgill) If you could tell me, do you  
01:29:04 7 recognize this document?

01:29:07 8 A. Yes, I do.

01:29:07 9 Q. And what is this portion of the document?

01:29:09 10 A. This is the LTE standard, the 3GPP document called  
01:29:20 11 36.212, which, among other things, tells us what the  
01:29:28 12 baseband chip needs to be able to do to send data from the  
01:29:32 13 phone to the baseband -- base station --

01:29:34 14 Q. And --

01:29:35 15 A. -- on the PUSCH channel.

01:29:39 16 Q. And did you help design the Intel chips to operate with  
01:29:43 17 this portion of the standard?

01:29:45 18 A. Yes, sir.

01:29:45 19 Q. And what did you do?

01:29:46 20 A. Well, I -- we -- well, we have the standard, and we --  
01:29:52 21 we have to send these SC-FDMA symbols from the phone that  
01:30:01 22 make up the P-U-S-C-H, PUSCH, channel from the phone to the  
01:30:05 23 base station, and we figure out how to send it in the most  
01:30:09 24 efficient way possible.

01:30:11 25 Q. And, first, what is this SC-FDMA symbol?

01:30:17 1 A. The SC-FDMA symbol is a unit of the PUSCH -- PUSCH  
01:30:23 2 channel. The PUSCH channel is made up of multiple such  
01:30:28 3 SC-FDMA symbols, and each SC-FDMA symbol contains data and  
01:30:35 4 control -- and/or control information.

01:30:36 5 Q. And how do the Intel baseband chips that you've worked  
01:30:41 6 on and that are now in the Apple products create and send  
01:30:46 7 these SC-FDMA symbols over the PUSCH channel?

01:30:50 8 A. We created one symbol at a time, that is, we take --  
01:30:58 9 we -- we -- we -- we -- we map the bits to the SC-FDMA  
01:31:08 10 symbol and stream it out. And we do that for all -- all --  
01:31:12 11 for all the bits that symbol and stream them all out before  
01:31:17 12 moving to the next SC-FDMA symbol.

01:31:20 13 So in an Intel -- in the baseband chip, we -- we  
01:31:24 14 don't have more than one SC-FDMA symbol at any time. So we  
01:31:31 15 just have that one SC-FDMA symbol. We put all the bits  
01:31:35 16 that we need for that SC-FDMA symbol into -- and transmit  
01:31:40 17 it out before we move to the next SC-FDMA symbol.

01:31:46 18 MR. SUMMERSGILL: Your Honor, may the witness  
01:31:48 19 approach the flip chart and -- and --

01:31:50 20 THE COURT: If you'll position it as we discussed  
01:31:52 21 earlier.

01:31:53 22 MR. SUMMERSGILL: Yes, Your Honor.

01:31:56 23 THE COURT: And he'll need to put a mask on.

01:32:17 24 If you'll come around, sir, and stand on this side  
01:32:21 25 of the chart.

01:32:22 1 Mr. Summersgill, you're welcome to go to the other  
01:32:25 2 side of the chart and examine him there if you'll speak up.

01:32:31 3 MR. SUMMERSGILL: Thank you, Your Honor.

01:32:32 4 THE COURT: And Mr. Sheasby, opposing counsel can  
01:32:33 5 position themselves where they can see.

01:32:35 6 MR. SHEASBY: Thank you, Your Honor.

01:32:37 7 Q. (By Mr. Summersgill) Now, Dr. Josiam, using the flip  
01:32:41 8 chart, can you please explain how the Intel baseband chips  
01:32:44 9 create and send these SC-FDMA symbols?

01:32:48 10 A. Yes, I can.

01:32:54 11 So -- so we -- let's -- we have an SC-FDMA symbol.  
01:33:02 12 So I'm drawing a rectangle that is -- that describes an  
01:33:06 13 SC-FDMA symbol. And we have to place data into the SC-FDMA  
01:33:11 14 symbol and transmit it out.

01:33:13 15 So the way the -- the Intel baseband chips do it  
01:33:21 16 when -- when they send -- when they assemble the SC-FDMA  
01:33:26 17 symbol is that they read these information bits, data and  
01:33:32 18 control information bits, and they -- they fill up the  
01:33:37 19 SC-FDMA symbol and stream it out.

01:33:41 20 So the filling of the SC-FDMA symbol is happening  
01:33:48 21 almost at the same time that we are streaming out the  
01:33:50 22 SC-FDMA symbol.

01:33:52 23 So we do this for one SC-FDMA symbol, and then  
01:33:58 24 once it's done and it's -- it's over, we go to the next  
01:34:03 25 SC-FDMA symbol where we then fill up the data for the

01:34:12 1 SC-FDMA symbol and then stream out the data.

01:34:16 2 So -- so there is -- there is data and control

01:34:22 3 information that is being filled in the SC-FDMA symbol and

01:34:26 4 read out as it's being filled in.

01:34:29 5 So there is no storage of the information at any

01:34:32 6 time into the -- in the -- in the baseband chips that make

01:34:37 7 up the Apple phones from Intel.

01:34:41 8 Q. And, Dr. Josiam, just one further question. What --

01:34:46 9 what -- well, looking at the column on the left, what --

01:34:50 10 what do the Intel baseband chips do after you've completed

01:34:54 11 mapping that one column?

01:34:56 12 MR. SHEASBY: Your Honor, I object to the use of

01:34:59 13 the word "mapping." He's not an expert. It's claim

01:35:02 14 language. It's clearly improper.

01:35:03 15 MR. SUMMERSGILL: I'm happy to use a different

01:35:05 16 word.

01:35:05 17 THE COURT: Rephrase the question. I'll sustain

01:35:08 18 the objection.

01:35:08 19 MR. SUMMERSGILL: Thank you, Your Honor.

01:35:09 20 Q. (By Mr. Summersgill) Dr. Josiam, what happens after

01:35:11 21 you have completed putting all the data into that one

01:35:14 22 column on the left?

01:35:15 23 A. We -- like I said, we -- we start filling up the data

01:35:21 24 for the SC-FDMA symbol, and we don't wait until we complete

01:35:25 25 putting up -- complete the -- all the bits for that SC-FDMA

01:35:31 1 symbol. We send it out as soon as we put the -- put the  
01:35:34 2 bits. We know what -- I mean, we calculate the information  
01:35:37 3 that needs to go in there. We --

01:35:38 4 THE COURT: Slow down, Dr. Josiam. I'm trying to  
01:35:41 5 listen to you from behind with a microphone through a mask  
01:35:46 6 and an accent. So you need to slow down. That's the only  
01:35:49 7 way I'm going to understand what you're saying. Okay?

01:35:52 8 THE WITNESS: Sure, sir.

01:35:54 9 THE COURT: Thank you.

01:35:55 10 THE WITNESS: Sure, Your Honor.

01:35:56 11 A. Okay. Let me start that again.

01:35:59 12 So -- yeah, so there are data and information bits  
01:36:01 13 that go into the SC-FDMA symbol. We do not wait until we  
01:36:06 14 fill up all the data bits into the SC-FDMA symbol before we  
01:36:12 15 send them out.

01:36:13 16 We have -- we have a logic that reads the bits,  
01:36:20 17 and streams them out as they are being read. So we  
01:36:25 18 don't -- so once all the bits for that SC-FDMA symbol are  
01:36:31 19 streamed out, we move to the next symbol and -- and then we  
01:36:36 20 do it all over again. And like this, we keep doing it  
01:36:42 21 until we have sent all the SC-FDMA symbols that make up the  
01:36:49 22 PUSCH channel that we are talking about.

01:36:52 23 Q. (By Mr. Summersgill) Dr. Josiam, you may resume your  
01:36:54 24 seat.

01:37:08 25 Now, Dr. Josiam, why do the Intel chips create and

01:37:13 1 send the SC-FDMA symbols in the way you've described?

01:37:18 2 A. The reason we do that is it's just efficient and fast

01:37:25 3 because we don't need to wait for anything. If we have the

01:37:29 4 SC-FDMA symbol -- the bits ready for that SC-FDMA symbol,

01:37:32 5 we just send it. So it's both efficient and fast.

01:37:37 6 MR. SUMMERSGILL: And, Your Honor, may I seal

01:37:39 7 the -- may we seal the courtroom?

01:37:40 8 THE COURT: All right. At counsel's request, it

01:37:43 9 appears we're about to cover confidential or proprietary

01:37:47 10 information. So, as I say, at counsel's request, I'll

01:37:53 11 order the courtroom sealed.

01:37:54 12 Those present not subject to the protective order

01:37:56 13 in this case or aligned with Defendant, Apple, should

01:38:00 14 excuse themselves until the courtroom is unsealed and

01:38:03 15 reopened.

01:38:04 16 (Courtroom sealed.)

01:38:04 17 (This portion of the transcript is sealed

01:38:04 18 and filed under separate cover as

02:46:53 19 Sealed Portion No. 12.)

02:46:53 20 (Courtroom unsealed.)

02:46:56 21 THE COURT: Ladies and gentlemen, we're going to

02:46:57 22 take a short recess. If you will leave your notebooks in

02:47:00 23 your chairs. Don't discuss the case or anything about this

02:47:03 24 trial with each other. Follow all my instructions, and

02:47:06 25 we'll have you back in here shortly to continue with the

02:47:09 1 next witness.

02:47:10 2 The jury is excused for recess at this time.

02:47:15 3 (Jury out.)

02:47:32 4 THE COURT: Counsel, during the recess, you need

02:47:34 5 to move that easel and turn it to a clean sheet.

02:47:37 6 Otherwise, we stand in recess.

02:47:39 7 (Recess.)

02:48:45 8 (Jury out.)

02:48:45 9 COURT SECURITY OFFICER: All rise.

02:48:48 10 THE COURT: Be seated, please.

03:04:15 11 Defendant, are you prepared to call your next  
03:04:36 12 witness?

03:04:36 13 MR. MUELLER: We are, Your Honor. I would just  
03:04:38 14 like to raise three things very, very briefly.

03:04:41 15 First, may Dr. Josiam be released?

03:04:44 16 THE COURT: Any objection?

03:04:45 17 MR. SHEASBY: No objection from Plaintiffs,  
03:04:47 18 Your Honor.

03:04:47 19 THE COURT: Dr. Josiam is released.

03:04:49 20 MR. MUELLER: Second, Your Honor, Dr. Buehrer is  
03:04:51 21 going to take the stand next. For both Dr. Buehrer and  
03:04:55 22 Dr. Wells, if they were to use the placard as Dr. Josiam  
03:04:58 23 did, would it be permissible for them to use a face shield  
03:05:03 24 rather than a mask? Whatever Your Honor's preference is,  
03:05:04 25 we'll do.

03:05:04 1 THE COURT: Is there a reason for that?

03:05:05 2 MR. MUELLER: Just so the jury can see their faces

03:05:08 3 while they're trying to teach these points, Your Honor.

03:05:10 4 THE COURT: My main concern is the comfort level

03:05:14 5 of the jury. I think the shield will be equal to the mask.

03:05:17 6 MR. MUELLER: Okay.

03:05:18 7 THE COURT: They don't need to be uncovered in any

03:05:20 8 fashion, though.

03:05:21 9 MR. MUELLER: Okay. The mask is sufficient?

03:05:23 10 THE COURT: The mask is sufficient.

03:05:24 11 MR. MUELLER: And then the last thing, Your Honor,

03:05:26 12 I would ask that some of the speaking objections be

03:05:29 13 shortened. We're being accused of quite a number of things

03:05:32 14 at length and we don't have an opportunity to respond.

03:05:35 15 We don't believe these charges are correct, but

03:05:35 16 the jury is hearing things like, we are, quote, laundering

03:05:44 17 things through objections. The objections have gotten

03:05:47 18 really long, and we'd ask that they be shortened.

03:05:48 19 THE COURT: I work very hard not to tell lawyers

03:05:48 20 how to try lawsuits and I'm not going to tell Plaintiff how

03:05:48 21 to make their objections.

03:05:53 22 Once they're made, I will certainly rule on them

03:05:56 23 in the same regard to yours. But if it reaches a point

03:06:02 24 that I think anybody on either side is making a speech to

03:06:05 25 the jury in the guise of an objection, I'll take

03:06:08 1 appropriate action. I don't think we've reached that  
03:06:10 2 point.

03:06:11 3 MR. MUELLER: Thank you, Your Honor.

03:06:11 4 THE COURT: All right. Let's bring in the jury,  
03:06:15 5 please.

03:06:15 6 COURT SECURITY OFFICER: All rise.

03:06:17 7 (Jury in.)

03:06:17 8 THE COURT: Please be seated.

03:06:45 9 Defendant, call your next witness.

03:06:48 10 MR. MUELLER: Your Honor, we call Dr. Michael  
03:06:55 11 Buehrer to the stand, please.

03:06:56 12 THE COURT: All right. Dr. Buehrer, if you'll  
03:06:59 13 come forward and be sworn.

03:07:13 14 (Witness sworn.)

03:07:14 15 THE COURT: Please come around, sir, have a seat  
03:07:16 16 at the witness stand.

03:07:17 17 All right. Counsel, you may proceed.

03:07:28 18 MR. MUELLER: Thank you, Your Honor.

03:07:28 19 MIKE BUEHRER, DEFENDANT'S WITNESS, SWORN

03:07:28 20 DIRECT EXAMINATION

03:07:28 21 BY MR. MUELLER:

03:07:28 22 Q. Good afternoon, Dr. Buehrer. Could you please  
03:07:31 23 introduce yourself to the ladies and gentlemen of the jury?

03:07:33 24 A. Sure. Hi. My name is Mike Buehrer, and I'm here to  
03:07:36 25 talk to you about the '284 patent.

03:07:37 1 Q. And, sir, could we start by you telling us a little bit  
03:07:44 2 about yourself and your background?

03:07:46 3 A. Sure. I've been married for about 25 years. I live in  
03:07:49 4 a small town outside -- well, actually, I live just outside  
03:07:52 5 a small town in southern Virginia with my wife, and we have  
03:07:56 6 six children.

03:07:57 7 And I've lived there for about 20 years where I  
03:08:02 8 teach electrical and computer engineering at Virginia Tech.

03:08:04 9 And in my spare time, when I have a little spare  
03:08:07 10 time between teaching and doing expert work, I enjoy  
03:08:11 11 coaching soccer, which I've also been doing for about 20  
03:08:14 12 years, and teaching -- or leading a youth group with my  
03:08:20 13 wife.

03:08:20 14 THE COURT: Dr. Buehrer, would you slow down,  
03:08:24 15 please?

03:08:24 16 THE WITNESS: Yes, sir.

03:08:24 17 THE COURT: Talk more slowly?

03:08:24 18 THE WITNESS: Yes, sir.

03:08:24 19 THE COURT: Thank you. Let's continue.

03:08:25 20 MR. MUELLER: Thank you, Your Honor.

03:08:26 21 Q. (By Mr. Mueller) Dr. Buehrer, what is your position at  
03:08:32 22 Virginia Tech?

03:08:33 23 A. I'm a professor of electrical and computer engineering.

03:08:37 24 Q. And for how long you have worked at Virginia Tech?

03:08:41 25 A. This will be my 30th year.

03:08:44 1 Q. Sir, can you describe your educational background  
03:08:47 2 beginning with college?

03:08:49 3 A. Sure. I received my Bachelor of Science in electrical  
03:08:54 4 engineering from the University of Toledo in 1991. I  
03:08:59 5 attended the University of Toledo after my father had left  
03:09:00 6 his sales position to teach at a local community college  
03:09:05 7 that allowed me and my four siblings to go to college for  
03:09:09 8 free.

03:09:09 9 So I graduated in 1991.

03:09:11 10 I then proceeded to get my Master of -- Master of  
03:09:16 11 Science in electrical engineering in 1993 with an emphasis  
03:09:21 12 on communication systems.

03:09:23 13 And then in 1996, I received a Ph.D. with an  
03:09:29 14 emphasis also in communications systems with a focus on  
03:09:34 15 signal processing applied to wireless systems.

03:09:37 16 Q. And, sir, where did you receive your Ph.D. from?

03:09:39 17 A. From Virginia Tech.

03:09:42 18 Q. What did you do after you earned your Ph.D.?

03:09:46 19 A. After my Ph.D., I took a position with Bell  
03:09:52 20 Laboratories in Murray Hill, New Jersey.

03:09:54 21 Q. What is Bell Laboratories?

03:09:57 22 A. Bell Laboratories is a research group that does  
03:10:00 23 research in communication systems. It was founded in the  
03:10:05 24 1920s by Alexander Graham Bell to perform research  
03:10:12 25 predominantly for communications, but actually they did a

03:10:15 1 lot of fundamental work there, as well.

03:10:18 2 For example, they invented the laser at Bell Labs.

03:10:21 3 They invented the transistor, which is the dominant

03:10:24 4 component in all computers. They also invented the

03:10:28 5 cellular concept, as well as communication theory and many

03:10:33 6 other -- other things.

03:10:34 7 Q. And what did you personally do in your time at Bell

03:10:39 8 Labs?

03:10:39 9 A. When I was at Bell Labs, my position entailed

03:10:44 10 performing research into advance signal processing

03:10:46 11 techniques that are applied to cellular communications.

03:10:50 12 Q. And for how long were you there?

03:10:52 13 A. I was for five years.

03:10:54 14 Q. What did you do after leaving Bell Labs?

03:10:57 15 A. After I left Bell Labs, I took a position back at

03:11:06 16 Virginia Tech to teach in electrical and computer

03:11:09 17 engineering.

03:11:10 18 Q. And why did you decide to join Virginia Tech?

03:11:13 19 A. Well, I had -- my wife and I had lived in that area

03:11:17 20 previously. I had always wanted to teach at some point in

03:11:20 21 my career. I just didn't know when. And my old advisor

03:11:25 22 had called me up and said, hey, there's a position opening.

03:11:29 23 Would you be interested in applying? So I decided to

03:11:33 24 apply, and I was blessed to be hired.

03:11:35 25 Q. And you've been there ever since?

03:11:37 1 A. Yes, I have.

03:11:37 2 Q. Now, sir, what do you do day-to-day at Virginia Tech in

03:11:42 3 terms of your responsibilities?

03:11:44 4 A. My primary responsibilities are teaching and research.

03:11:48 5 Q. What types of classes do you teach?

03:11:50 6 A. I teach classes from freshman up through graduate

03:11:55 7 students, but more specifically I teach courses in signals

03:12:02 8 and systems for sophomores, introduction to communications

03:12:06 9 for juniors, and advanced communications systems for

03:12:09 10 seniors, as well as multiple communications courses for

03:12:14 11 graduate students, including classes that cover many of the

03:12:17 12 technologies that are used in modern cellular systems.

03:12:20 13 Q. What type of research do you do?

03:12:21 14 A. My research focuses predominantly on wireless

03:12:28 15 communication systems, but also some of it involves

03:12:32 16 geolocation systems and radar systems.

03:12:34 17 Q. Do any organizations fund any of your research?

03:12:37 18 A. Yes, they do. The National Science Foundation funds my

03:12:41 19 research. The Defense Advanced Research Projects Agency,

03:12:46 20 which is the research arm of the Department of Defense,

03:12:49 21 funds my research, as does the Army Research Lab and the

03:12:53 22 Office of Naval Research, as well as some commercial

03:12:57 23 companies.

03:12:58 24 Q. Have you published any papers in the field of wireless

03:13:06 25 communications?

03:13:06 1 A. Yes, I have. I've published approximately 250 to 300  
03:13:13 2 papers in the leading journals and conferences in my field.  
03:13:16 3 Q. Have you worked on any real-world cellular systems?  
03:13:19 4 A. Yes, I have.  
03:13:20 5 Q. Could you give us an example?  
03:13:21 6 A. Yes. When I was at Bell Labs, my colleagues and I came  
03:13:26 7 up with a -- a technology that we felt could be put into  
03:13:34 8 the current -- the cellular standard at that time. So we  
03:13:37 9 participated in 3GPP2 standards meetings and were able to  
03:13:42 10 get that idea into the standard.  
03:13:45 11 Q. And which standard are you referring to, sir?  
03:13:49 12 A. That's the 3GPP2 -- that was the 3G standard at the  
03:13:52 13 time in North America.  
03:13:53 14 Q. Have you received any patents on cellular technology?  
03:13:56 15 A. Yes, I have.  
03:13:57 16 Q. And about how many patents do you have?  
03:13:59 17 A. I believe it is currently 17 patents.  
03:14:02 18 Q. Have you won any awards for your work in wireless  
03:14:05 19 technologies?  
03:14:06 20 A. Yes. I've won awards from the university. I've won  
03:14:14 21 best paper awards at conferences. And I was also named an  
03:14:20 22 IEEE fellow. The IEEE is the dominant professional  
03:14:23 23 organization in my field, and the grade of --  
03:14:23 24 Q. But what does that stand for, IEEE?  
03:14:26 25 A. I'm sorry, yes. IEEE stands for the Institute of

03:14:31 1 Electrical and Electronics Engineers, and that is the  
03:14:32 2 dominant professional organization in my field.

03:14:35 3 Q. And I believe you had said you were named a fellow of  
03:14:37 4 the IEEE. What does that mean?

03:14:39 5 A. That's correct. I was named a fellow. The grade of  
03:14:46 6 fellow is reserved for less than one-tenth of 1 percent of  
03:14:50 7 the overall membership in the IEEE that have made  
03:14:55 8 outstanding contributions in the field.

03:14:57 9 MR. MUELLER: Your Honor, at this point, we offer  
03:14:59 10 Dr. Buehrer as an expert in wireless communication systems.

03:15:02 11 THE COURT: Is there objection?

03:15:03 12 MR. SHEASBY: No objection, Your Honor.

03:15:05 13 THE COURT: All right. Without objection, the  
03:15:06 14 Court will recognize this witness as an expert in the  
03:15:09 15 designated fields.

03:15:09 16 Please continue.

03:15:11 17 MR. MUELLER: Thank you, Your Honor.

03:15:12 18 Q. (By Mr. Mueller) Dr. Buehrer, what have you been asked  
03:15:14 19 to do in this case?

03:15:15 20 A. So I've been asked to do two things.

03:15:18 21 First, I was asked to look at the asserted claims  
03:15:22 22 of the '284 patent and to determine whether the Apple  
03:15:26 23 products infringe those claims.

03:15:29 24 Secondly, I was asked to look at the '284 patent  
03:15:32 25 and determine whether or not it was valid.

03:15:35 1 Q. Now, sir, what did you do, at a high level, to perform  
03:15:40 2 that assignment?

03:15:40 3 A. To do infringement -- to do the infringement analysis,  
03:15:49 4 I -- at a high level, I looked at the patent and  
03:15:52 5 particularly the claims of the patent, and compared them  
03:15:55 6 to -- first I compared them to LTE, but then more  
03:15:59 7 importantly, I compared them to the Apple products.

03:16:01 8 Q. And what did you do to evaluate invalidity?

03:16:05 9 A. I looked at the patents -- I looked at the patent and  
03:16:11 10 also looked at the prior art.

03:16:14 11 Q. Now, for your work on this case, are you being  
03:16:16 12 compensated at your normal hourly rate for consulting?

03:16:20 13 A. Yes, I am.

03:16:21 14 Q. And what is that rate?

03:16:22 15 A. \$450 per hour.

03:16:24 16 Q. Now, sir, you have been retained by Apple in other  
03:16:27 17 projects in the past?

03:16:28 18 A. Yes, I have.

03:16:29 19 Q. Is either the money you're being paid for your work on  
03:16:34 20 this case or your prior work for Apple -- does that in any  
03:16:38 21 way affect your opinions in this case?

03:16:39 22 A. No, it does not.

03:16:40 23 Q. Does whether Apple prevails in this case or not affect  
03:16:45 24 your compensation in any way whatsoever?

03:16:47 25 A. No, it does not.

03:16:48 1 Q. Are your opinions independent and your own?

03:16:51 2 A. Yes, they are.

03:16:52 3 Q. And what is your conclusion as to whether the Apple

03:16:55 4 products in this case infringe the '284 patent?

03:16:58 5 A. It's my opinion that the Apple products do not infringe

03:17:04 6 the asserted claims of the '284 patent.

03:17:06 7 Q. And may we walk through your analysis, sir?

03:17:10 8 A. Yes, we can.

03:17:11 9 Q. Now, to begin, when was the first time you heard of the

03:17:14 10 '284 patent?

03:17:14 11 A. I believe the first time I heard of the '284 patent was

03:17:19 12 when I became involved in this -- in this case.

03:17:22 13 MR. MUELLER: And if we could please put up

03:17:26 14 DDX-7.04.

03:17:27 15 Q. (By Mr. Mueller) What is this, sir?

03:17:28 16 A. So on the left, that is the front page of the '284

03:17:36 17 patent. And on the right, we have some excerpts from that

03:17:38 18 page.

03:17:39 19 Q. And at a high level, sir, what is the subject matter of

03:17:42 20 the '284 patent?

03:17:43 21 A. The subject matter of the '284 patent is control

03:17:48 22 signaling in a communication system.

03:17:49 23 Q. What is control signaling?

03:17:52 24 A. So control signaling is the information that is sent

03:17:57 25 either from the base station to the mobile -- to the phone

03:18:02 1 or from the phone to the base station that helps the other  
03:18:06 2 side understand how the data is going to be formatted.

03:18:09 3 MR. MUELLER: Your Honor, may I approach --

03:18:11 4 Q. (By Mr. Mueller) Sorry --

03:18:12 5 A. I was just going to say there are many ways that the  
03:18:15 6 user data can be formatted when it's sent, and so the  
03:18:21 7 receiver has to know how it was sent in that particular  
03:18:24 8 case.

03:18:24 9 MR. MUELLER: Your Honor, may I approach the  
03:18:25 10 blackboard?

03:18:26 11 THE COURT: You may use the easel, counsel.

03:18:29 12 MR. MUELLER: Use the easel. Thank you.

03:18:32 13 Q. (By Mr. Mueller) So Dr. Buehrer, if we have a phone  
03:18:34 14 over here and a base station antenna over here, those can  
03:18:37 15 communicate with each other. Do I have that right?

03:18:39 16 A. Yes, sir.

03:18:39 17 Q. And you're saying part of what they communicate with  
03:18:42 18 each other is control information?

03:18:44 19 A. That is correct.

03:18:57 20 MR. MUELLER: Let's put up DDX-7.5 if we could,  
03:19:01 21 please.

03:19:01 22 Q. (By Mr. Mueller) And what do we see here, Dr. Buehrer?

03:19:04 23 A. So here we see an example of using control information.  
03:19:07 24 So on the left is a base station, and that base station is  
03:19:11 25 sending control information to the phone. The phone then

03:19:17 1 reads that control information and understands how to  
03:19:20 2 format the data so that it can be transmitted from the  
03:19:24 3 phone to the base station.

03:19:25 4 Q. What are some examples of control parameters?

03:19:31 5 A. There are many, many control parameters, but two -- two  
03:19:35 6 examples that are important to our case here are the  
03:19:38 7 transport format and the redundancy version.

03:19:42 8 Q. What is the transport format?

03:19:46 9 A. Well, the transport format can correspond to many  
03:19:49 10 different parameter -- or a few different parameters, but  
03:19:52 11 they all have to do with how the data is formatted.

03:19:56 12 One important version of the transport format is  
03:19:59 13 the transport block size.

03:20:01 14 MR. MUELLER: So if we could go to DDX-7.6.

03:20:05 15 Q. (By Mr. Mueller) And you understand that His Honor has  
03:20:08 16 interpreted some of the words of the patents in this case,  
03:20:11 17 Dr. Buehrer?

03:20:12 18 A. Yes, sir.

03:20:13 19 Q. And, of course, we need to follow what His Honor has  
03:20:16 20 given us precisely, right, sir?

03:20:18 21 A. That is correct.

03:20:19 22 Q. And have you done that?

03:20:20 23 A. Yes, sir, I have.

03:20:21 24 Q. So what do we see here on the screen?

03:20:24 25 A. This is the definition of "transport format" that I

03:20:28 1 followed in my analysis.

03:20:29 2 Q. And what is that definition?

03:20:31 3 A. As we can see, transport format -- transport format

03:20:36 4 means either transport format, transport block size,

03:20:40 5 payload size, or modulation and coding scheme.

03:20:45 6 MR. MUELLER: If we could go to DDX-7.7, please.

03:20:50 7 Q. (By Mr. Mueller) And, Dr. Buehrer, what do we see

03:20:52 8 here?

03:20:52 9 A. So here we see an example of the use of transport block

03:20:56 10 size.

03:21:00 11 So the base station sends an instruction to the

03:21:02 12 phone that says use the transport block size of 100. The

03:21:07 13 phone then, when it sends its data back to the base

03:21:10 14 station, it -- it only will send 100 bits at a time or 100

03:21:15 15 pieces of information.

03:21:19 16 Q. Now, is transport block size sometimes called the

03:21:22 17 payload size?

03:21:23 18 A. Yes, it is.

03:21:23 19 Q. And why is that?

03:21:25 20 A. Because that corresponds to the payload in the

03:21:27 21 transmission, the -- the information that we care about.

03:21:31 22 MR. MUELLER: So if we go to DDX-7.8.

03:21:35 23 Q. (By Mr. Mueller) Dr. Buehrer, what do we see here with

03:21:37 24 respect to redundancy version?

03:21:40 25 A. So, again, we see an example of the -- of the use of

03:21:46 1 redundancy version. So what's happening is the base  
03:21:49 2 station is sending a message -- a control message to the  
03:21:52 3 phone saying use Redundancy Version 0. The phone then  
03:21:57 4 responds by formatting the data by using Redundancy  
03:22:01 5 Version 0.

03:22:02 6 Q. What is redundancy in this context? What does it mean?

03:22:07 7 A. So redundancy is extra information that is added to  
03:22:12 8 the -- the regular user information in order to protect  
03:22:16 9 against errors or to try to make errors less likely.

03:22:19 10 Q. And -- and -- why is that necessary in this context?

03:22:23 11 A. Because when we -- when the phone or the base station  
03:22:26 12 transmits information to the receiver, there are -- there  
03:22:31 13 is interference from other signals. There might be -- the  
03:22:34 14 signal might run into a building, many things can happen,  
03:22:40 15 and that will cause the signal to degrade or deteriorate so  
03:22:44 16 that at the receiver, we can no longer understand -- the  
03:22:47 17 receiver can no longer understand what was sent.

03:22:51 18 MR. MUELLER: So let's go to DDX-7.91, the one  
03:22:56 19 before this one.

03:22:57 20 Q. (By Mr. Mueller) And tell us what we see here,  
03:22:58 21 Dr. Buehrer.

03:22:59 22 A. So this is an example of errors. So, let's say I pick  
03:23:03 23 up the phone to call my mom. I say, hello. Well, the  
03:23:06 24 phone is going to take the word "hello" and it's going to  
03:23:06 25 convert it into 1s and 0s and send that up to the base

03:23:10 1 station.

03:23:11 2 Well, along the way, because of interference or

03:23:15 3 other problems, what actually gets received is junk, and

03:23:19 4 it's -- there are errors. And so the base station --

03:23:22 5 there's a way for the base station to know that it's wrong,

03:23:24 6 and it will say, okay, something went wrong. I didn't get

03:23:27 7 this right.

03:23:29 8 MR. MUELLER: So, Your Honor, may I approach the

03:23:31 9 easel?

03:23:31 10 THE COURT: You may.

03:23:32 11 Q. (By Mr. Mueller) So if this phone is sending a signal

03:23:35 12 over-the-air, and there's an actual lightning strike, as an

03:23:39 13 example, what could happen?

03:23:40 14 A. Well, that could cause electromagnetic interference,

03:23:44 15 which would cause errors to be received at the base

03:23:47 16 station.

03:23:47 17 Q. And what are some other sources of interference in --

03:23:50 18 in real life?

03:23:51 19 A. Well, signals from other mobile phones and other net

03:23:56 20 cells could be interference. It could be -- there could be

03:24:02 21 various signals that are transmitted from various devices

03:24:05 22 that could cause interference in the same frequency band

03:24:08 23 that the cell phone is using.

03:24:11 24 MR. MUELLER: So if we go to DDX-7.10.

03:24:15 25 Q. (By Mr. Mueller) Tell us, Dr. Buehrer, how does

03:24:17 1 redundancy help here?

03:24:19 2 A. Okay. So, what happens is, again, what the phone is  
03:24:23 3 doing is it's trying to send the same information multiple  
03:24:26 4 times so that if there are some errors, it knows how to fix  
03:24:29 5 it.

03:24:29 6 So, for example, one way that it could do this is  
03:24:32 7 when I say hello, what it actually sends is hello, hello,  
03:24:37 8 hello, so it's sending "hello" three times. But the base  
03:24:41 9 station understands that whatever it's sending, it's  
03:24:43 10 sending it three times in a row so that it knows how to  
03:24:46 11 properly decode that.

03:24:48 12 MR. MUELLER: If you go to 7 -- DDX-7.11.

03:24:52 13 Q. (By Mr. Mueller) Could you please explain what we see  
03:24:54 14 here?

03:24:54 15 A. Sure. Even when we use the redundancy, it might not  
03:24:57 16 work. So here we see, we sent the "hello" three times, but  
03:25:00 17 there was enough interference that what came through still  
03:25:04 18 doesn't look like "hello," so the base station still makes  
03:25:07 19 a mistake. But, again, it knows that a mistake has been  
03:25:10 20 made, and so it will ask for another transmission.

03:25:14 21 MR. MUELLER: If we go to DDX-7.12.

03:25:17 22 Q. (By Mr. Mueller) What do we see here?

03:25:19 23 A. So, as I said earlier, there are different ways that  
03:25:23 24 the base station can add redundancy. In fact, there are  
03:25:26 25 four different ways that are used in LTE. So here is a --

03:25:31 1 an example of perhaps what you might do.

03:25:34 2 Instead of sending the word "hello" three times in

03:25:36 3 a row, we send each letter three times in a row. Again,

03:25:40 4 it's still being repeated, but it's being repeated in a

03:25:44 5 slightly different way. And, again, the base station has

03:25:46 6 to know that's the way the redundancy was added.

03:25:49 7 MR. MUELLER: Let's please go to DDX-7.13.

03:25:52 8 Q. (By Mr. Mueller) And the term RV, we've seen that a

03:25:59 9 few times over the course of this trial. What is that

03:26:02 10 referring to?

03:26:02 11 A. RV means redundancy version. So what it corresponds to

03:26:06 12 is it tells the phone which way of adding that redundancy

03:26:10 13 should you use during the next transmission.

03:26:14 14 So, for example, in this slide, the base station

03:26:19 15 first tells the phone, use Redundancy Version 0. It does

03:26:23 16 that. But let's say there's a lot of interference, and so

03:26:28 17 it doesn't come through.

03:26:29 18 And so then the base station will send another

03:26:31 19 signal to the -- to the phone and say, okay, this time use

03:26:35 20 Redundancy Version 1. And so then it does that, it uses

03:26:39 21 Redundancy Version 1, and let's say in this example it gets

03:26:41 22 through on the second try.

03:26:43 23 Q. So Redundancy Version 0 is an actual thing?

03:26:46 24 A. Yes, it is. And -- and in this case, 0 doesn't mean

03:26:53 25 nothing. It means the first one. Typically, in computer

03:26:56 1 language, 0 means the first one. So if we were numbering  
03:27:01 2 something, instead of numbering 1, 2, 3, we would number 0,  
03:27:07 3 1, 2.  
03:27:07 4 Q. And were you here when Dr. Mahon testified?  
03:27:10 5 A. Yes, yes, I was.  
03:27:11 6 Q. And did you hear me ask if I could label  
03:27:14 7 Mr. Summersgill lawyer 0 for purposes of my example?  
03:27:17 8 A. Yes, I did.  
03:27:18 9 Q. Well, here he'd be -- we'll call him person 0?  
03:27:23 10 A. Right, sure.  
03:27:24 11 Q. And Mr. Blevins will be person 1?  
03:27:26 12 A. Sure. That's --  
03:27:26 13 Q. But there's actually two people there?  
03:27:27 14 A. That's right.  
03:27:27 15 Q. Same thing with Redundancy Version 0?  
03:27:29 16 A. That's right.  
03:27:29 17 Q. All right.  
03:27:33 18 MR. MUELLER: Let's go to DDX-7.14.  
03:27:36 19 Q. (By Mr. Mueller) What do we see here?  
03:27:37 20 A. So, here we see an illustration of the concept of  
03:27:41 21 control fields. So when we send control information, that  
03:27:48 22 information is just a string of 1s and 0s.  
03:27:53 23 Now, the phone has to know how to interpret those  
03:27:56 24 1s and 0s. So there's a pre-determined pattern, meaning --  
03:28:02 25 or way of interpreting it by breaking that group of 1s and

03:28:09 1 0s into multiple pieces that we called fields.

03:28:11 2 So per -- in this example, the phone knows that

03:28:14 3 the first nine bits that are sent correspond to the first

03:28:19 4 field, the next five bits correspond to the second field,

03:28:23 5 and so on.

03:28:25 6 Q. What are some ways that control parameters can be sent

03:28:29 7 in fields?

03:28:30 8 A. Well, there are two fundamental ways that we send the

03:28:34 9 control parameters in control fields.

03:28:37 10 One is called separate fields, meaning that we

03:28:41 11 reserve one field for each parameter.

03:28:46 12 The second way is what we call a common field. In

03:28:50 13 a common field, we will send multiple parameters in the

03:28:54 14 same field.

03:28:57 15 MR. MUELLER: And if we go to DDX-7.15.

03:29:00 16 Q. (By Mr. Mueller) Is that what we see here, sir?

03:29:02 17 A. That's right. So in the top illustration, we see that

03:29:08 18 the first field is used for transport format, and the

03:29:14 19 second field is used for redundancy version.

03:29:16 20 In the bottom illustration, we have one common

03:29:18 21 field that is used to -- to transfer both transport format

03:29:24 22 as well as redundancy version. So both parameters are sent

03:29:28 23 in the same field.

03:29:34 24 MR. MUELLER: Now, if you go to 7.16.

03:29:36 25 Q. (By Mr. Mueller) What were some of the ways or options

03:29:38 1 that were available to the standards setting organization  
03:29:44 2 for transmitting a transport block size and redundancy  
03:29:46 3 version during the creation of the LTE standard?  
03:29:49 4 A. So here we see three different contributions which were  
03:29:55 5 documents that were submitted to the 3GPP standards body by  
03:29:59 6 different companies that proposed different ways to send  
03:30:05 7 the transport block size and redundancy version.  
03:30:08 8 So, for example, Qualcomm submitted a proposal  
03:30:12 9 that said we should use separate fields, so transport --  
03:30:19 10 the transport block size and redundancy version would be  
03:30:20 11 sent in different fields.  
03:30:22 12 Samsung said, well, let's not send the redundancy  
03:30:25 13 version at all. Instead, we could just have a predefined  
03:30:30 14 sequence, so you would just know based on some other  
03:30:34 15 sequence what redundancy version you were going to use each  
03:30:36 16 time, but you wouldn't actually have to send that  
03:30:38 17 information.  
03:30:40 18 The Ericsson proposal proposed something similar.  
03:30:44 19 MR. MUELLER: Now, let's go to DDX-1.19 if my eyes  
03:30:50 20 are reading it correctly. This is Table 8.6.1-1 of the LTE  
03:30:57 21 standard. DDX-7. -- here we go.  
03:31:07 22 Q. (By Mr. Mueller) Dr. Buehrer, what did the standards  
03:31:11 23 setting organization ultimately arrive at?  
03:31:12 24 A. So, for transmitting the transport block size or, in  
03:31:14 25 this case, transport block size index and redundancy

03:31:18 1 version, they came up with this table 8.6.1-1.

03:31:23 2 Q. Does this '284 patent being asserted by the plaintiffs

03:31:28 3 in this case cover this table?

03:31:31 4 A. No, it does not.

03:31:36 5 MR. MUELLER: Now, if we could go back to

03:31:40 6 DDX-7.18.

03:31:41 7 Q. (By Mr. Mueller) What do we see here, sir?

03:31:42 8 A. So here are two of the -- two of the asserted claims

03:31:48 9 from the '284 patent.

03:31:50 10 Q. And I'd like to focus your attention on the bottom of

03:31:54 11 these two claims, the very last piece. Do you see that,

03:31:57 12 sir?

03:31:57 13 A. Yes, I do.

03:31:57 14 Q. Could you read that to us?

03:31:59 15 A. Sure. It says: Wherein the first subset of the values

03:32:03 16 contains more values than the second subset of the values.

03:32:06 17 Q. And was this a requirement that was added to the patent

03:32:10 18 during the back and forth at the Patent Office?

03:32:12 19 MR. SHEASBY: Your Honor, I object.

03:32:14 20 A. Yes, it was.

03:32:15 21 MR. SHEASBY: Relevance, and the answer should be

03:32:17 22 stricken.

03:32:18 23 THE COURT: I don't see any relevance. I'll

03:32:24 24 sustain the objection.

03:32:25 25 MR. MUELLER: Thank you, Your Honor. I may bring

03:32:27 1 that up again and ask Your Honor's permission in the  
03:32:30 2 validity context, but I can wait until then.

03:32:33 3 THE COURT: Well, if you can establish some  
03:32:34 4 relevance, then you can certainly raise it then. Let's  
03:32:38 5 move along.

03:32:39 6 MR. MUELLER: Thank you, Your Honor.

03:32:40 7 Q. (By Mr. Mueller) So, we're in the first subset of the  
03:32:43 8 values contains more values than the second subset of the  
03:32:46 9 values. Do you see that, sir?

03:32:47 10 A. Yes, I do.

03:32:47 11 Q. Now --

03:32:47 12 MR. MUELLER: Your Honor, may we ask permission --  
03:32:50 13 may I ask permission now for Dr. Buehrer to come up to the  
03:32:53 14 placard that I'm going to put on this easel, and I'll move  
03:32:55 15 it over here and Dr. Buehrer can put a face shield on.

03:32:57 16 THE COURT: We'll do it just like we did with  
03:33:00 17 Mr. Summersgill earlier.

03:33:01 18 MR. MUELLER: Thank you, Your Honor.

03:33:25 19 THE COURT: Just a minute. We need a handheld  
03:33:28 20 microphone for the witness, please.

03:33:32 21 And then you need to examine him from the other  
03:33:34 22 side of the demonstrative, Mr. Mueller.

03:33:36 23 MR. MUELLER: Thank you -- thank you, Your Honor.

03:34:12 24 May I proceed, Your Honor?

03:34:14 25 THE COURT: You may proceed.

03:34:15 1 MR. MUELLER: Thank you.

03:34:16 2 Q. (By Mr. Mueller) Dr. Buehrer, you were here when I

03:34:19 3 cross-examined Dr. Mahon, right?

03:34:20 4 A. Yes, I was.

03:34:21 5 Q. And you recognize this was a demonstrative they created

03:34:24 6 during the cross-examination of Dr. Mahon?

03:34:26 7 A. Yes.

03:34:27 8 Q. And do you see, I underlined some language in Claim 1

03:34:31 9 of the '284 patent here on the left?

03:34:34 10 A. Yes, that's correct.

03:34:35 11 Q. And then I drew some boxes on the right-hand side. Do

03:34:39 12 you see this, sir?

03:34:40 13 A. Yes, I do.

03:34:40 14 Q. And this is the very same table that we were just

03:34:44 15 looking at a moment ago from the LTE standard?

03:34:46 16 A. Yes, it is.

03:34:47 17 Q. So I'd like to ask you a few questions about this.

03:34:50 18 A. Sure.

03:34:50 19 Q. First, where does the claim require a first subset of

03:34:55 20 values that is reserved for indicating the transport

03:34:59 21 format?

03:34:59 22 A. We see that right here. First subset of the values is

03:35:05 23 reserved for indicating the transport format of the

03:35:08 24 protocol data unit.

03:35:09 25 Q. And what did you do to analyze whether the LTE standard

03:35:14 1 met that requirement?

03:35:15 2 A. Well, I looked at the -- this table and looked at the  
03:35:21 3 MCS indices, go from 0 to 32 -- or 0 to 31, excuse me. And  
03:35:26 4 I determined which of these values is used for indicating  
03:35:30 5 the transport block size index.

03:35:34 6 Q. And, sir, if you could show us on the right-hand side  
03:35:38 7 where they are.

03:35:41 8 A. So these are the transport block size -- transport  
03:35:46 9 block size index values that are transmitted, and then  
03:35:50 10 these would be the MCS values that are used to indicate --  
03:35:58 11 or reserved to indicate transport format or transport block  
03:36:01 12 size index.

03:36:01 13 Q. And that's that payload size that we referred to  
03:36:06 14 earlier?

03:36:07 15 A. Yes.

03:36:07 16 Q. Now, could you please label the first subset in the  
03:36:11 17 appropriate place on the table?

03:36:31 18 And, sir, how many values are in that first  
03:36:34 19 subset?

03:36:35 20 A. There are 29.

03:36:35 21 Q. And where are you getting that 29 from?

03:36:37 22 A. I'm simply counting up the MCS indices that indicate a  
03:36:44 23 transport block size index.

03:36:46 24 Q. Sir, could you write that number at the bottom?

03:36:49 25 A. Sure.

03:36:50 1 Q. Dr. Buehrer, where does the claim require a second  
03:36:55 2 subset of the values, different from the first subset,  
03:36:59 3 reserved for indicating the redundancy version?  
03:37:03 4 A. We can see this here in the claim right after what we  
03:37:07 5 just looked at. We see -- we see that it says: A second  
03:37:10 6 subset of the values, different from the first subset, that  
03:37:14 7 is reserved for indicating the redundancy version.  
03:37:17 8 Q. Now, how did you identify the subset of values that are  
03:37:22 9 reserved for indicating the redundancy version in this LTE  
03:37:25 10 table over here?  
03:37:27 11 A. Well, again, I simply looked at this table and  
03:37:30 12 identified all the MC -- MCS indices that -- that -- that  
03:37:35 13 indicate a redundancy version.  
03:37:38 14 Q. And where do we see those? I'm sorry.  
03:37:41 15 A. That's all right. It's -- these are the redundancy  
03:37:45 16 versions, and the values that indicate them are these.  
03:37:52 17 Q. Could you label those "the second subset"?  
03:37:55 18 A. Sure.  
03:38:00 19 MR. SHEASBY: Your Honor, I object. This is --  
03:38:01 20 this is a leading question at this point.  
03:38:12 21 THE COURT: Well, at this point he has answered  
03:38:14 22 the question. You can certainly raise that objection if  
03:38:18 23 there's a future leading question asked.  
03:38:20 24 MR. SHEASBY: Thank you.  
03:38:21 25 Q. (By Mr. Mueller) Dr. Buehrer, if you could -- what --

03:38:23 1 what is required by that last part of the claim that we see  
03:38:26 2 up here on the left?

03:38:28 3 A. The last requirement of the claim limitation requires  
03:38:30 4 that the first subset of values --

03:38:30 5 Q. Can you just take it a little slower?

03:38:32 6 A. Sure. I'm sorry.

03:38:34 7 This last requirement requires that the first  
03:38:38 8 subset of values contain more values than the second subset  
03:38:43 9 of values.

03:38:43 10 Q. How does that requirement compare to the LTE table?

03:38:47 11 A. Well, obviously, it does not. The LTE table does not  
03:38:51 12 meet this requirement because the LTE table -- there are  
03:38:56 13 more values in the second subset than in the first.

03:39:01 14 Q. So in the claim, what needs to be bigger? The first  
03:39:04 15 subset or the second subset?

03:39:05 16 A. In the claim, the first subset needs to be better.

03:39:09 17 Q. And in the real LTE standard, what is bigger?

03:39:12 18 A. The second subset.

03:39:13 19 Q. Thank you, sir. You can return to your witness stand.

03:39:17 20 MR. MUELLER: Your Honor, may I move this back  
03:39:19 21 here?

03:39:19 22 THE COURT: Yes, please do.

03:39:38 23 All right. Let's continue.

03:39:40 24 MR. MUELLER: Thank you, Your Honor.

03:39:42 25 Q. (By Mr. Mueller) Now, what is the implication of this

03:39:49 1 for whether Apple infringes '284, Claim 1?

03:39:55 2 A. Well, Apple does not infringe Claim 1 of the '284

03:40:00 3 patent.

03:40:04 4 Q. And just so we're clear, what redundancy version is

03:40:07 5 indicated by these 0s?

03:40:09 6 A. I'm sorry, could you repeat that question?

03:40:13 7 Q. Sure. These 0s here, what do they indicate?

03:40:16 8 A. They indicate Redundancy Version 0.

03:40:19 9 Q. Is that an actual thing?

03:40:20 10 A. Yes, it is.

03:40:22 11 MR. MUELLER: Let's go to DDX-7.20.

03:40:25 12 Q. (By Mr. Mueller) And what do we see here, sir?

03:40:32 13 A. So here, we see the three asserted claims of the '284

03:40:39 14 patent. It says '283, but it's the '284 patent. And -- so

03:40:45 15 that's Claims 1, 14, and 27.

03:40:47 16 Q. And what is your opinion as to whether the Apple

03:40:54 17 products and the Intel and Qualcomm chips within them meet

03:40:57 18 the requirements that we see in yellow here?

03:40:59 19 A. They do -- they do not meet the requirements seen in

03:41:04 20 yellow.

03:41:05 21 Q. Why not?

03:41:05 22 A. Because the first subset is -- the first subset of

03:41:11 23 values is actually smaller than the second subset. Or, in

03:41:15 24 other words, the first subset of values does not contain

03:41:17 25 more values than the second subset of values.

03:41:19 1 Q. Now, if we look at Claim 27, the third claim in this  
03:41:25 2 case, do you see it says: The method according to  
03:41:29 3 Claim 14?  
03:41:30 4 A. Yes, I do.  
03:41:30 5 Q. And what is the implication of that for your analysis  
03:41:34 6 of whether there's infringement?  
03:41:35 7 A. Well, because Claim 27 depends from Claim 14, since  
03:41:42 8 there's no infringement on Claim 14, there's no  
03:41:45 9 infringement on Claim 27.  
03:41:47 10 Q. Now, sir, this is a table in the LTE standard, right?  
03:41:50 11 A. Yes, it is.  
03:41:51 12 Q. Have you also considered evidence relating to the  
03:41:57 13 actual Intel and Qualcomm baseband chips at issue in this  
03:42:00 14 case?  
03:42:00 15 A. Yes, I have.  
03:42:01 16 Q. Were you here when Dr. Josiam testified?  
03:42:04 17 A. Yes, I was.  
03:42:05 18 Q. He testified about how the Intel chips worked. Do you  
03:42:09 19 recall that?  
03:42:09 20 A. Yes, I do.  
03:42:10 21 Q. And did you see him show to the ladies and gentlemen of  
03:42:13 22 the jury computer source code from within those Intel  
03:42:15 23 chips?  
03:42:15 24 A. Yes.  
03:42:16 25 Q. Do you agree with Dr. Josiam's explanation of the Intel

03:42:22 1 source code?

03:42:22 2 A. Yes.

03:42:23 3 Q. You have reviewed that source code yourself?

03:42:25 4 A. Yes, I have.

03:42:26 5 Q. And what did that source code tell you about how the

03:42:29 6 Intel baseband chips operated with respect to this LTE

03:42:34 7 table?

03:42:34 8 A. So as I looked at the Intel source code, the Intel

03:42:41 9 source code follows this table. And so it determines a

03:42:47 10 transport block index for values 0 through 28, just like we

03:42:52 11 see in the table. And it determines a redundancy version

03:42:56 12 for all of the values, all the MCS values.

03:43:02 13 And so, again, in the -- in the code, there are

03:43:04 14 more values for indicating the redundancy version than

03:43:08 15 are -- there are for -- than there are values that are

03:43:13 16 reserved for indicating transport format or transport block

03:43:17 17 size index.

03:43:17 18 Q. So is it consistent or inconsistent with this table?

03:43:20 19 A. It's consistent with this table.

03:43:24 20 MR. MUELLER: Your Honor, may I ask to briefly

03:43:26 21 seal the courtroom to discuss some Qualcomm source code?

03:43:30 22 I'm going to have to have ask Mr. Blevins to leave, too.

03:43:35 23 THE COURT: All right. At counsel's request, I'll

03:43:37 24 order the courtroom sealed. Those present not subject to

03:43:40 25 the protective order are directed to excuse themselves and

03:43:43 1 remain outside the courtroom until it's unsealed and the  
03:43:46 2 public is invited to return.

03:43:49 3 MR. MUELLER: Your Honor, may I use the document  
03:43:51 4 camera?

03:43:51 5 THE COURT: Let's wait until the courtroom is  
03:43:54 6 sealed, counsel.

03:43:48 7 (Courtroom sealed.)

03:43:48 8 (This portion of the transcript is sealed.

03:43:48 9 and filed under separate cover as

03:43:56 10 Sealed Portion No. 13.)

03:47:28 11 (Courtroom unsealed.)

03:47:50 12 MR. MUELLER: May I proceed, Your Honor?

03:47:52 13 THE COURT: Just a moment. I need to get all my  
03:47:57 14 people in their right places.

03:47:58 15 MR. MUELLER: Understood.

03:48:00 16 THE COURT: You may proceed, counsel.

03:48:05 17 MR. MUELLER: Thank you, Your Honor.

03:48:05 18 Q. (By Mr. Mueller) Dr. Buehrer, in sum, for your  
03:48:07 19 analysis of whether there was any infringement, did you  
03:48:11 20 consider the patent itself?

03:48:12 21 A. Yes, I did.

03:48:13 22 Q. The LTE standard?

03:48:15 23 A. Yes, I did.

03:48:16 24 Q. The Intel baseband chips and the source code on those  
03:48:20 25 chips?

03:48:20 1 A. Yes, I did.

03:48:22 2 Q. The Qualcomm baseband chips and the source code on

03:48:25 3 those chips?

03:48:25 4 A. Yes, I did.

03:48:26 5 Q. And what is your conclusion as to whether any of the

03:48:30 6 Apple products or any of the Qualcomm or Intel chips use

03:48:35 7 the '284 patent claims?

03:48:38 8 A. My conclusion is that the Apple products do not

03:48:44 9 infringe the asserted claims of the '284 patent.

03:48:46 10 Q. Now, did Dr. Mahon offer any theory under the Doctrine

03:48:50 11 of Equivalents for this patent?

03:48:51 12 A. No, I don't believe he did.

03:48:54 13 Q. Now, Dr. Mahon testified about Panasonic's proposals to

03:48:58 14 the 3GPP standard-setting organization, right?

03:49:02 15 A. Yes, he did.

03:49:03 16 Q. And let's put up a slide that he used.

03:49:07 17 MR. MUELLER: This is DDX-7.21.

03:49:13 18 Q. (By Mr. Mueller) This is Slide 21 from the deck you

03:49:15 19 showed the jury. And do you see the title here is "LTE

03:49:18 20 Adopts Invention"?

03:49:22 21 A. Yes, I do.

03:49:22 22 Q. Do you have an opinion as to whether or not that's

03:49:25 23 correct?

03:49:25 24 A. Yes. It's my opinion that that's not what happened

03:49:28 25 here.

03:49:28 1 Q. Why not?

03:49:30 2 A. Well, we can see from the Panasonic proposal and what  
03:49:33 3 was actually in the LTE standard that they're -- they're  
03:49:35 4 different. And upon examination, we'll find even more  
03:49:38 5 differences.

03:49:39 6 Q. And feel free to -- to write on the screen in front of  
03:49:43 7 you. But could you explain to us what those differences  
03:49:45 8 are?

03:49:46 9 A. Sure. So, first of all, in the Panasonic proposal, we  
03:49:49 10 have this range column. There is no such range column in  
03:49:54 11 the LTE standard.

03:49:56 12 Second, the Pan -- the Panasonic proposal included  
03:50:01 13 something called the NDI bit, or new data indicator here.  
03:50:07 14 The LTE standard did not include the NDI bit in this chart,  
03:50:12 15 in this table. There is an NDI bit in the standard, but  
03:50:16 16 not -- not transmitted using the MCS index.

03:50:21 17 Also, we note that in Panasonic's proposal, they  
03:50:27 18 proposed sending the transport block size directly. So, in  
03:50:34 19 other words, each MCS value would correspond to a specific  
03:50:39 20 transport block size. That's not what we find in the LTE  
03:50:43 21 standard. In the LTE standard, instead, we have a block  
03:50:49 22 size index.

03:50:50 23 Now, the block size index is then used along with  
03:50:54 24 other information to obtain the transport block size, but  
03:50:59 25 one nice advantage of this approach is that while what we

03:51:02 1 see in the Panasonic proposal, only 29 different transport  
03:51:08 2 block sizes could be sent.

03:51:08 3 The way that it's done in LTE, you can actually  
03:51:13 4 send hundreds of different values by using the transport  
03:51:16 5 block size index, as well as the -- the resource allocation  
03:51:23 6 information, which comes in a different message or in a --  
03:51:27 7 a different place.

03:51:28 8 Q. So bottom line, was the Panasonic proposal adopt --  
03:51:32 9 adopted as a part of LTE?

03:51:34 10 A. No, it wasn't.

03:51:36 11 Q. Is the '284 patent essential to LTE?

03:51:39 12 A. No, it's not.

03:51:40 13 Q. And is the '284 patent infringed by Apple?

03:51:42 14 A. No, it's not.

03:51:45 15 MR. MUELLER: Now, we can take this down.

03:51:47 16 Q. (By Mr. Mueller) You were -- you were here when  
03:51:49 17 Dr. Mahon presented his invalidity theory -- I'm sorry, his  
03:51:52 18 infringement theory to the jury, right?

03:51:54 19 A. Yes, I was.

03:51:54 20 Q. And how do you understand Dr. Mahon's theory to operate  
03:52:00 21 with respect to this table?

03:52:02 22 A. So in the Plaintiffs' -- the Plaintiffs' theory, they  
03:52:07 23 ignore RV 0. So the -- all the RV 0s are ignored when --  
03:52:15 24 when determining the second subset.

03:52:17 25 Q. So when you say RV 0s are ignored, you're referring to

03:52:21 1 these 29 values right here?

03:52:24 2 A. That is correct.

03:52:24 3 Q. They're not counted as part of that set?

03:52:27 4 A. That's right.

03:52:28 5 Q. Why is that wrong?

03:52:29 6 A. Because the subsets are defined very clearly in the  
03:52:33 7 claim, and we have to look to the claim for understanding  
03:52:39 8 how to define the subsets, and -- and the claim says that  
03:52:44 9 the second subset are the values that are reserved for  
03:52:47 10 indicating the redundancy version.

03:52:50 11 Q. And redundancy version 0 is a redundancy version?

03:52:53 12 A. Yes, it is.

03:52:53 13 Q. Just like person 0 is a real person, Mr. Summersgill,  
03:52:58 14 right here?

03:52:58 15 A. As far as I know.

03:52:59 16 Q. Okay. And you think that's right or wrong to ignore  
03:53:04 17 the 0s?

03:53:04 18 A. I believe that's incorrect.

03:53:10 19 Q. Now, I want you to take Dr. Mahon's infringement theory  
03:53:13 20 and explain to the jury what the implications of that  
03:53:16 21 theory would be as applied to the prior art, that is to  
03:53:21 22 say, what came before the '284 patent. Do you have that in  
03:53:24 23 mind?

03:53:24 24 A. Yes, I do.

03:53:25 25 Q. If we took Dr. Mahon's infringement theory and applied

03:53:29 1 it to the prior art, what would the result be?

03:53:32 2 A. Well, if we -- if we applied the meaning that he's --

03:53:39 3 he is to the prior art, what would end up happening is that

03:53:45 4 we would find that the -- that the patent -- or the

03:53:49 5 claims -- the asserted claims are invalid because the prior

03:53:51 6 art already teaches what that would imply.

03:53:55 7 Q. So do you view his theory as consistent with the scope

03:53:58 8 of the claims or broader?

03:54:01 9 A. It would be broader.

03:54:03 10 Q. And if we take that broader theory and apply it to the

03:54:06 11 prior art, what's the result?

03:54:08 12 A. Then if we applied that to the -- if we use that to

03:54:11 13 analyze the prior art, then the patent would be invalid.

03:54:15 14 MR. MUELLER: Your Honor, may I put a placard -- a

03:54:19 15 new placard up here?

03:54:20 16 THE COURT: You may use another demonstrative.

03:54:22 17 MR. MUELLER: Thank you, Your Honor.

03:54:32 18 Q. (By Mr. Mueller) So, Dr. Buehrer, what I'd like to do

03:54:36 19 is to go through the requirements of Claim 1 and for you to

03:54:40 20 explain what the implications of Dr. Mahon's infringement

03:54:44 21 theory would be as applied to the prior art. Do you have

03:54:46 22 that in mind?

03:54:47 23 A. Yes.

03:54:48 24 Q. So let's start with the first requirement right here.

03:54:54 25 What do we have?

03:54:55 1 A. The first requirement is a mobile terminal for use in a  
03:55:01 2 mobile communication system.

03:55:02 3 Q. And were those known before the '284 patent?

03:55:05 4 MR. SHEASBY: Your Honor, I object. This is an  
03:55:07 5 improper validity analysis. The doctor needs to present a  
03:55:13 6 reference or a combination of references, find those  
03:55:16 7 elements in the reference, and apply them using an  
03:55:18 8 obviousness analysis. Simply saying something was not  
03:55:21 9 known in prior art is not a legal obviousness analysis.

03:55:25 10 THE COURT: Are you telling me the testimony  
03:55:28 11 called for and elicited from the witness is outside the  
03:55:31 12 scope of his report?

03:55:31 13 MR. SHEASBY: Yes. It's outside the scope of his  
03:55:34 14 validity opinion, Your Honor. His validity opinion is  
03:55:37 15 based on a combination of references --

03:55:40 16 THE COURT: You've answered my question.

03:55:42 17 Now, let me ask for a response from Mr. Mueller.

03:55:44 18 MR. MUELLER: Your Honor, this is the preamble. I  
03:55:47 19 was just trying to check off the box that mobile terminals  
03:55:50 20 were known. I'm happy to refer to a reference. It doesn't  
03:55:54 21 really matter either way.

03:55:55 22 THE COURT: Then why don't you refer to a  
03:55:57 23 reference.

03:55:57 24 MR. MUELLER: Fair enough, Your Honor.

03:55:59 25 Q. (By Mr. Mueller) Sir, you mentioned a few times a

03:56:02 1 Samsung proposal, right?

03:56:03 2 A. Yes.

03:56:04 3 MR. MUELLER: Let's pull up DTX-0417.

03:56:09 4 Q. (By Mr. Mueller) And this is at Tab 5 in your binder.

03:56:16 5 Dr. Buehrer, what is this?

03:56:18 6 A. So this document is a proposal that Samsung wrote in

03:56:26 7 2002 as a part of the development of a 3.5G standard

03:56:32 8 knowing as HSDPA.

03:56:35 9 MR. MUELLER: And let's look at the date there and

03:56:37 10 highlight it, if we could, at the top of the screen.

03:56:44 11 Q. (By Mr. Mueller) January 8th through 11th, 2002. Do I

03:56:49 12 have that right, sir?

03:56:49 13 A. Yes, that's correct.

03:56:51 14 MR. MUELLER: And if we could just briefly pull up

03:56:53 15 the cover of the '284 patent.

03:56:55 16 Q. (By Mr. Mueller) And, sir, what's the key date for the

03:56:58 17 '284 patent?

03:56:58 18 A. It is December 20th, 2007.

03:57:05 19 Q. And is that before or after the Samsung proposal?

03:57:08 20 A. It is after the Samsung proposal.

03:57:10 21 Q. In fact, it's about five years after, right?

03:57:14 22 A. That's right.

03:57:16 23 Q. Let's turn back to the Samsung proposal.

03:57:18 24 MR. MUELLER: And if we could please look at

03:57:21 25 Table 3 in this proposal, which spans Pages 3 and 4.

03:57:25 1 Q. (By Mr. Mueller) And Dr. Buehrer, let me know when  
03:57:27 2 you're there.

03:57:28 3 A. Okay. I'm here.

03:57:29 4 Q. What do we see?

03:57:31 5 A. So, this Table 3 is a proposal from -- is part of this  
03:57:35 6 proposal from Samsung that proposes using a common field to  
03:57:43 7 transmit transport block size, as well as redundancy  
03:57:50 8 version. And we can see -- yeah, it's highlighted there.

03:57:55 9 Q. Now, under Dr. Mahon's infringement theory, do they  
03:57:57 10 include or exclude Redundancy Version 0 from the second  
03:58:02 11 subset of the values?

03:58:03 12 A. Well, in -- in the Plaintiffs' infringement theory,  
03:58:07 13 they exclude Redundancy Version 0. So if you exclude  
03:58:12 14 Redundancy Version 0, which would be the preset redundancy  
03:58:18 15 version that would be used in this case, then what we can  
03:58:21 16 see from this table is that for transport block size, they  
03:58:26 17 use 6 bits.

03:58:29 18 Those 6 bits can represent 64 different values.  
03:58:33 19 So there would be 64 different values that he could  
03:58:35 20 represent the transport block size.

03:58:39 21 On the other hand, redundancy version, you can see  
03:58:43 22 that only two of the six bits were going to be reserved for  
03:58:49 23 redundancy version, so that they would only -- they would  
03:58:52 24 only need -- there would only be as many as four different  
03:58:56 25 redundancy versions, although, in general, they would only

03:58:58 1 use three of them because one of them would be used with  
03:59:01 2 the -- with the initial transport block size.

03:59:03 3 So, again, if you ignore that one, what the  
03:59:08 4 transport block size that is sent with the initial  
03:59:10 5 transmission as they do -- as the Plaintiffs do, then we  
03:59:13 6 can see that there would be as many as 64 transport block  
03:59:18 7 sizes and only three or possibly four redundancy versions.

03:59:24 8 Q. So if we go to the language of Claim 1, again, we're  
03:59:27 9 taking Dr. Mahon's infringement theory and applying it to  
03:59:29 10 this prior art, right?

03:59:31 11 A. That's right.

03:59:33 12 Q. If we do that, does the Samsung proposal meet the  
03:59:36 13 second to last and last requirements in Claim 1? Those are  
03:59:41 14 the Requirements No. 5 and 6?

03:59:45 15 A. Yes, it does.

03:59:46 16 Q. May I check the boxes under that theory?

03:59:49 17 A. Yes.

03:59:51 18 Q. Now?

03:59:55 19 MR. MUELLER: Now, let's go back to DTX-0417 at  
04:00:03 20 Page 4, Table 3.

04:00:08 21 Q. (By Mr. Mueller) And, sir, if we focus on the fourth  
04:00:09 22 requirement in Claim 1, what is your opinion as to whether  
04:00:14 23 this Samsung proposal discloses or renders obvious the  
04:00:22 24 fourth element?

04:00:22 25 A. It's my opinion that the Samsung proposal renders

04:00:27 1 obvious the fourth element. What it discloses is a common  
04:00:30 2 field approach known as a shared field. And a shared field  
04:00:34 3 is a slight variation of a -- of joint encoding. So  
04:00:40 4 it's -- it's roughly the same concept.

04:00:43 5 And so, it's my opinion that the disclosure of a  
04:00:46 6 com -- I'm sorry -- a shared field renders obvious the  
04:00:52 7 joint encoding of those same two parameters.

04:00:55 8 Q. May I check off Element 4?

04:00:57 9 A. Yes.

04:00:58 10 MR. SHEASBY: Your Honor, I move to strike that  
04:01:01 11 answer. There's no such thing as obviousness of an  
04:01:05 12 element. Claims are obvious.

04:01:07 13 THE COURT: Overruled.

04:01:11 14 Q. (By Mr. Mueller) Now, let's look, if we could, at the  
04:01:13 15 third requirement, No. 3. Do you see that, sir?

04:01:17 16 A. Yes, I do.

04:01:19 17 Q. Okay.

04:01:19 18 MR. MUELLER: And let's turn to another document,  
04:01:24 19 DTX-0102.

04:01:29 20 Q. (By Mr. Mueller) What is this?

04:01:30 21 A. This is a version -- an earlier version of the 3GPP  
04:01:36 22 standard that we've been talking about. This is 36. -- it  
04:01:41 23 is Technical Specification 36.212, Version 8.0.0. So it  
04:01:49 24 describes multiplexing and channel coding in LTE.

04:01:52 25 Q. And was this before or after the '284 patent?

04:01:55 1 A. It was before. We can see that because it is a  
04:02:00 2 September 2007 date.

04:02:06 3 MR. MUELLER: And let's look at DTX-106. It's  
04:02:10 4 also in Tab 4 in your binder.

04:02:12 5 Q. (By Mr. Mueller) Sir, what is this?

04:02:13 6 A. This is Technical Specification 36.321, Version 1.0.0.  
04:02:21 7 It is also an earlier version of the -- of a technical  
04:02:25 8 specification that's part of the 3GPP LTE standard.

04:02:28 9 Q. And was this before or after the '284 patent?

04:02:30 10 A. It was before the '284 patent.

04:02:33 11 Q. Now, these two documents that we just looked at,  
04:02:40 12 DTX-102 and 106, comprise prior art LTE standard  
04:02:43 13 specifications?

04:02:44 14 A. Yes, they do.

04:02:49 15 Q. Now, how do these two documents relate to your analysis  
04:02:52 16 of Requirements 1, 2, and 3?

04:02:54 17 A. These two documents together disclose all three  
04:03:01 18 elements -- 1, 2, and 3 -- as well as the preamble.

04:03:06 19 Q. May we check off these boxes?

04:03:09 20 A. Yes.

04:03:10 21 Q. Now, sir, what is your conclusion -- again, applying  
04:03:13 22 Dr. Mahon's infringement theory to the prior art that we've  
04:03:16 23 looked at -- with respect to Claim 1?

04:03:20 24 A. It's my opinion that if we use -- if we apply the  
04:03:26 25 claim -- claim limitations in the way that Dr. Mahon did,

04:03:30 1 then the -- then Claim 1 would be invalid.

04:03:33 2 MR. MUELLER: Let's look at DDX-7.24.

04:03:37 3 Q. (By Mr. Mueller) What is your -- this is another

04:03:47 4 summary of Claim 1; is that right, sir?

04:03:49 5 A. Correct.

04:03:50 6 MR. MUELLER: Could we go to 7.25?

04:03:52 7 Q. (By Mr. Mueller) What do we see here, again, applying

04:03:55 8 Dr. Mahon's infringement theory to the prior art references

04:03:57 9 that we just looked at?

04:03:58 10 A. Again, if we use that -- that theory, then Claim 14

04:04:03 11 would be obvious for the same reasons that Claim 1 would.

04:04:08 12 MR. MUELLER: Then, finally, let's look at the

04:04:10 13 next slide, DDX-7.26.

04:04:13 14 Q. (By Mr. Mueller) And applying Dr. Mahon's theory to

04:04:15 15 the prior art references that we looked at, what is your

04:04:18 16 opinion with respect to Claim 27 of the '284 patent?

04:04:21 17 A. Claim 27 would also be invalid.

04:04:26 18 Q. Now, for all three of the asserted claims, have we

04:04:31 19 looked at each and every one of the limitations?

04:04:33 20 A. Yes, I did.

04:04:34 21 Q. Given each and every one of them meaning in your

04:04:37 22 invalidity analysis?

04:04:38 23 A. I'm sorry. Say that again.

04:04:39 24 Q. I'm sorry. You've given each and every one of them

04:04:44 25 meaning in your analysis?

04:04:45 1 A. Yes.

04:04:45 2 Q. And what is your conclusion, applying Dr. Mahon's

04:04:49 3 infringement theory, with respect to the invalidity of the

04:04:52 4 three claims in this case, having done a

04:04:54 5 limitation-by-limitation analysis?

04:04:56 6 A. That if we used that infringement theory, the three

04:05:00 7 claims would be invalid.

04:05:00 8 Q. Last couple of questions. Is that infringement theory,

04:05:05 9 right?

04:05:05 10 A. No, it's not.

04:05:06 11 Q. Is it consistent with a proper application of the

04:05:09 12 claims?

04:05:09 13 A. No, it's not.

04:05:10 14 Q. Under a proper application of the claims, has Apple

04:05:14 15 ever infringed the '284 patent?

04:05:17 16 A. No.

04:05:19 17 MR. MUELLER: Nothing further, Your Honor. I pass

04:05:20 18 the witness.

04:05:21 19 THE COURT: All right. Pull your demonstrative

04:05:22 20 down, counsel.

04:05:32 21 All right. We'll proceed with cross-examination

04:05:34 22 by the Plaintiff.

04:05:34 23 CROSS-EXAMINATION

04:05:40 24 BY MR. SHEASBY:

04:05:40 25 Q. Good afternoon, Dr. Buehrer. It's nice to -- to see

04:05:43 1 you again.

04:05:44 2 A. Good afternoon.

04:05:45 3 Q. We met over the Internet previously?

04:05:50 4 A. I think that's correct.

04:05:54 5 Q. Now, sir, you've been a paid expert witness for Apple

04:06:03 6 eight times in the last five years.

04:06:09 7 A. I don't think that's exactly correct.

04:06:10 8 Q. Well, why don't we go through it, and we'll count them

04:06:13 9 up?

04:06:14 10 A. Sure.

04:06:14 11 Q. So if you go to your binder --

04:06:22 12 A. Uh-huh.

04:06:23 13 Q. -- and you look at Tab 1, and I put a little red flag

04:06:28 14 next to your resume, which says: Expert witness

04:06:33 15 experience.

04:06:35 16 A. Which binder?

04:06:38 17 MR. SHEASBY: Your Honor, may I approach the

04:06:40 18 witness to assist, if I put on a mask?

04:06:46 19 THE WITNESS: Is this -- here we go.

04:06:48 20 THE COURT: Give him just a minute.

04:07:00 21 A. Okay.

04:07:01 22 Q. (By Mr. Sheasby) Okay. So I don't want you to read

04:07:03 23 out any names. I just want you to count -- count with me.

04:07:07 24 It's on --

04:07:07 25 A. Sure.

04:07:07 1 Q. -- Page 30 of your CV.

04:07:09 2 A. Yep.

04:07:10 3 Q. And let's count the numbers in which you represented

04:07:15 4 Apple over the -- represented Apple. Go ahead and count

04:07:17 5 them out. Count them -- say them out loud.

04:07:19 6 A. Okay. We have one, two, three, four -- four, five,

04:07:24 7 six, seven, eight, oh, you're right. I was thinking of

04:07:27 8 this -- there's two Wi-LANS. I was thinking of those as

04:07:31 9 the same -- as being the same. But, okay, fair enough.

04:07:35 10 Q. So over the last five years, you've represented Apple

04:07:39 11 eight times as an expert witness.

04:07:46 12 A. Over the -- over the last six years, I believe.

04:07:50 13 Q. Over the last six years, it's actually more than eight.

04:07:56 14 It's nine, right?

04:07:58 15 A. I don't think so.

04:07:58 16 Q. Let's count again.

04:07:59 17 A. All right. Okay. My memory might be failing me.

04:08:04 18 THE COURT: Let's make this distinct questions and

04:08:08 19 answers, not an ongoing mumbling conversation between the

04:08:13 20 two of you, please, okay?

04:08:14 21 MR. SHEASBY: Yes, Your Honor.

04:08:15 22 THE COURT: Distinct answers to distinct

04:08:18 23 questions.

04:08:18 24 Q. (By Mr. Sheasby) If you could count them out loud.

04:08:20 25 A. One, two, three, four, five, six, seven, eight.

04:08:25 1 Q. Eight over the last five years?

04:08:27 2 A. Well, it started in May of 2015, so '15, '16, '17, '18,

04:08:38 3 '19, '20, so I would say that's six years. Eight over the

04:08:50 4 last six years.

04:08:51 5 THE COURT: It's heartening to see a Ph.D. in

04:08:53 6 science count on his fingers.

04:08:55 7 Q. (By Mr. Sheasby) Sir, I think you are right. I think

04:08:57 8 it is eight times over the last six years, not the last

04:09:00 9 five years.

04:09:01 10 A. Okay.

04:09:04 11 THE COURT: Now can we move on?

04:09:06 12 Q. (By Mr. Sheasby) Now, over the last six years, you've

04:09:13 13 been paid by Apple more than \$760,000, fair?

04:09:17 14 A. I think that's about right.

04:09:20 15 Q. Over the last five years, that would approximate the

04:09:27 16 amount of salary you've received from Virginia Tech, fair?

04:09:32 17 A. I don't think so, not over the last six years.

04:09:37 18 Q. Sir, you testified that the ballpark range that you

04:09:41 19 received from Virginia Tech is 150 to 170,000 a year?

04:09:47 20 A. That's about right, yes.

04:09:48 21 Q. And you've been paid \$760,000 by Apple, correct?

04:09:51 22 A. That's correct.

04:09:52 23 Q. Now, you described yourself -- and I wrote it down --

04:10:05 24 as an independent expert, correct?

04:10:08 25 A. Correct.

04:10:11 1 Q. Is it fair for the ladies and gentlemen of the jury,  
04:10:15 2 when they retire to deliberate, to consider whether someone  
04:10:20 3 who has been paid \$760,000 by a company and testified eight  
04:10:26 4 times for them in the last six years is independent? Is it  
04:10:30 5 fair for them to consider that?

04:10:31 6 A. That would be for them to decide.

04:10:33 7 Q. You have no opinion on the subject?

04:10:35 8 A. My opinion is that I am independent.

04:10:40 9 Q. The ladies and gentlemen of the jury, we can agree, can  
04:10:44 10 consider that testimony, correct?

04:10:45 11 A. That is certainly their decision, yes.

04:10:46 12 Q. Do you know what the median household income is in the  
04:10:51 13 United States?

04:10:52 14 A. I do not.

04:10:52 15 Q. It's \$31,000 a year.

04:10:55 16 A. Okay.

04:10:56 17 Q. Did you know that?

04:10:58 18 A. I'll take your word for it.

04:10:59 19 Q. And over the last six years, you've been paid \$760,000  
04:11:04 20 by Apple, fair?

04:11:05 21 A. Yes.

04:11:05 22 Q. Now, you said something that was interesting to me.  
04:11:11 23 You talked about a 3GPP2 committee. Remember that?

04:11:15 24 A. Yes, I do.

04:11:16 25 Q. Now, when I was first learning about this technology, I

04:11:22 1 thought 3GPP2 and 3GPP were the same. But they're actually  
04:11:27 2 not, correct?

04:11:28 3 A. That's correct.

04:11:30 4 Q. The committee that constructed LTE is known as 3GPP,  
04:11:40 5 correct?

04:11:40 6 A. Correct.

04:11:41 7 Q. 3GPP2, the committee you participated in, had no role  
04:11:47 8 whatsoever in LTE, fair?

04:11:49 9 A. Correct.

04:11:50 10 Q. You have never participated in any 3GPP meetings,  
04:11:57 11 correct?

04:11:57 12 A. That is true.

04:11:58 13 Q. You've never participated in any technical committee or  
04:12:01 14 working group responsible for LTE, correct?

04:12:06 15 A. That is correct.

04:12:07 16 Q. You've never made a technical contribution to the LTE  
04:12:11 17 standard, correct?

04:12:13 18 A. That is correct.

04:12:14 19 Q. You have no patents that are essential to the LTE  
04:12:22 20 standard, correct?

04:12:23 21 A. That is correct.

04:12:24 22 Q. You have never implemented the LTE standard on any  
04:12:29 23 mobile device ever, ever, correct?

04:12:31 24 A. That is correct.

04:12:34 25 Q. You have no -- you have no idea whatsoever what role

04:12:38 1 Apple played in LTE, correct?

04:12:41 2 A. I'm sorry, could you repeat your question?

04:12:46 3 Q. You have no role whatsoever -- I withdraw the question,

04:12:49 4 and let me re-ask it.

04:12:50 5 A. Okay.

04:12:51 6 Q. You have no idea whatsoever what role Apple played in

04:12:56 7 LTE, correct?

04:12:57 8 A. What do you mean by "role in LTE," please? They do

04:13:05 9 sell devices.

04:13:06 10 THE COURT: If you don't understand the question,

04:13:07 11 say: I don't understand the question.

04:13:09 12 THE WITNESS: Thank you, sir.

04:13:10 13 A. I don't understand the question.

04:13:11 14 Q. (By Mr. Sheasby) You don't understand what I mean by

04:13:14 15 "role"?

04:13:14 16 A. I don't understand what -- I don't understand your

04:13:17 17 question.

04:13:18 18 Q. You claimed that you did not investigate the role that

04:13:26 19 Apple played in LTE, correct?

04:13:32 20 A. Are you -- are you referring to the development of the

04:13:35 21 standard?

04:13:40 22 MR. SHEASBY: Your Honor, I object as

04:13:42 23 non-responsive. If he says he does not --

04:13:45 24 A. I do not understand the question.

04:13:47 25 Q. (By Mr. Sheasby) Okay. Well, let's go to your

04:13:49 1 deposition, which is Tab 1 in your binder.

04:13:53 2 A. Okay.

04:13:54 3 Q. And why don't you turn to Page 81, Lines 13 through 17.

04:14:29 4 Tell me when you're there.

04:14:30 5 A. Okay. Lines 13 to 17. Okay.

04:14:36 6 Q. Did you give that testimony?

04:14:43 7 A. Yes, I did.

04:14:44 8 Q. Was that testimony accurate?

04:14:45 9 A. Yes, it was.

04:14:48 10 MR. SHEASBY: Let's publish that.

04:14:50 11 THE WITNESS: Sure.

04:14:51 12 Q. (By Mr. Sheasby) Question: Did you investigate

04:14:53 13 whether Apple had any meaningful role whatsoever in the

04:14:57 14 release of Version 8 of LTE?

04:14:59 15 Answer: I did not investigate the role of Apple

04:15:02 16 in the release of Version 8 of LTE.

04:15:05 17 Did you give that testimony?

04:15:07 18 A. Yes, I did.

04:15:08 19 Q. And you understood what the word "role" meant when I

04:15:11 20 used it in your deposition, correct?

04:15:13 21 A. I understand that -- I understood what you meant by "role"

04:15:15 22 in that question.

04:15:16 23 Q. Okay.

04:15:16 24 A. But -- okay.

04:15:18 25 Q. Now, you said something in response to a question by

04:15:39 1 Mr. Mueller. You said: I didn't know about these patents  
04:15:43 2 before this case. Fair?

04:15:45 3 A. Yes. I don't recall hearing of these patents before  
04:15:49 4 this case.

04:15:49 5 Q. But when engineers talk about standards, they discuss  
04:15:53 6 technologies involved as to those specific patents,  
04:15:57 7 correct?

04:15:57 8 A. Generally speaking, that is correct.

04:16:01 9 Q. And you had no role in the LTE committees in which  
04:16:06 10 these technologies were created, correct?

04:16:10 11 A. That is correct.

04:16:13 12 Q. The technical specifications -- and let's stop there.

04:16:23 13 I withdraw that question.

04:16:24 14 There's a patent, and a patent has something  
04:16:26 15 called a specification, correct?

04:16:27 16 A. That is correct.

04:16:29 17 Q. And those are the words that describe the patent and  
04:16:32 18 explain it, fair?

04:16:33 19 A. Yes.

04:16:36 20 Q. Now, there's something called a technical  
04:16:39 21 specification, correct?

04:16:41 22 A. Correct.

04:16:41 23 Q. And that's part of the LTE standard, correct?

04:16:44 24 A. Correct.

04:16:45 25 Q. And so when -- when we say specification and technical

04:16:49 1 specification, it's actually referring to two different  
04:16:53 2 things, just for clarification, fair?  
04:16:55 3 A. That you will -- that's the way you'll refer to them?  
04:16:59 4 Q. Uh-huh.  
04:17:02 5 A. Okay.  
04:17:02 6 Q. Okay. The technical specifications, which means the  
04:17:05 7 standard essentially telling you how to build devices that  
04:17:08 8 can talk to each other using the standard, fair?  
04:17:12 9 A. Yes.  
04:17:17 10 Q. Now, you have no understanding of the most  
04:17:24 11 technologically significant functions in LTE, correct?  
04:17:27 12 A. I'm not entirely sure what you're asking me.  
04:17:38 13 Q. You have not done any analysis whatsoever -- whatsoever  
04:17:42 14 to determine the most significant functions in LTE,  
04:17:46 15 correct?  
04:17:46 16 A. I have not done an analysis to determine which are the  
04:17:49 17 most significant functions, that is correct.  
04:17:51 18 Q. And so, if Dr. Mahon said that the functions implicated  
04:17:58 19 by this patent are some of the most significant in LTE, you  
04:18:03 20 would have no response to that, fair, in your report?  
04:18:06 21 A. I don't think that's exactly correct.  
04:18:13 22 Q. Well, didn't you just tell me you did no analysis of  
04:18:16 23 what the most important parts of the LTE specification are?  
04:18:19 24 A. Yes, I did.  
04:18:19 25 Q. Now, you've never stated that all that is necessary

04:18:27 1 for -- let me withdraw the question.

04:18:28 2 You've sat through a lot of the trial, correct?

04:18:31 3 A. I've sat through some of it, yes.

04:18:33 4 Q. You heard Apple's lawyers talk about something called

04:18:35 5 the baseband chip, correct?

04:18:36 6 A. Yes.

04:18:37 7 Q. Talked about it a significant amount, fair?

04:18:40 8 A. I don't know how significant, but I have heard them

04:18:46 9 talk about the baseband chip, yes.

04:18:47 10 Q. You don't know what "significant" means, sir?

04:18:50 11 A. In your context, no.

04:18:51 12 Q. So when the ladies and gentlemen of the jury assess

04:18:53 13 credibility, they should consider whether you can actually

04:18:57 14 understand what the word "significant" means, fair?

04:19:00 15 MR. MUELLER: Your Honor, I object. That's not

04:19:02 16 what he said.

04:19:03 17 THE COURT: This is getting argumentative.

04:19:07 18 Let's go on to the next question.

04:19:08 19 Q. (By Mr. Sheasby) You have never stated that all that

04:19:16 20 is necessary for LTE communications is the baseband,

04:19:19 21 correct?

04:19:19 22 A. That's not all that's required, correct.

04:19:25 23 Q. And you have never stated that the value of LTE

04:19:28 24 communications is represented by the baseband, correct?

04:19:31 25 A. I'm not -- I'm not sure. I'm not --

04:19:47 1 Q. Well --

04:19:49 2 A. If you're referring to part of my deposition, I guess

04:19:52 3 we could go there.

04:19:53 4 Q. Well, sir, if you can answer the -- I withdraw what I

04:19:57 5 just said.

04:19:57 6 Sir, you have never stated that the value of LTE

04:20:01 7 communication is represented by the baseband, correct?

04:20:04 8 A. I don't think I stated that with respect to this --

04:20:10 9 with this case, no.

04:20:14 10 MR. SHEASBY: Well, why don't we go to your

04:20:20 11 deposition at Page 108, Lines 8 through 14?

04:20:48 12 A. Okay.

04:20:49 13 Q. (By Mr. Sheasby) Did you give that testimony?

04:20:51 14 A. Yes, I did.

04:20:52 15 Q. Is that testimony accurate?

04:20:54 16 A. I think it is, yeah.

04:20:57 17 MR. SHEASBY: Let's publish that.

04:21:00 18 A. Sure.

04:21:01 19 Q. (By Mr. Sheasby) You believe that all the value of LTE

04:21:03 20 communication is represented by the baseband chip, correct?

04:21:10 21 I don't know that I've ever said that.

04:21:14 22 A. The word "ever" is not there, but I don't believe that

04:21:17 23 I've said that. Yes, that's what I said.

04:21:19 24 Q. And that's correct, fair?

04:21:20 25 A. Yeah, that was correct.

04:21:21 1 Q. You understand that Apple's damages case places the  
04:21:29 2 value of what's at issue in this case in the baseband chip,  
04:21:32 3 correct?  
04:21:32 4 A. I believe that is correct.  
04:21:33 5 Q. You understand that Apple has an expert named  
04:21:45 6 Dr. Kennedy -- Perryman who's going to discuss damages,  
04:21:49 7 correct?  
04:21:49 8 A. That sounds right. I'll take your word for it. Yes, I  
04:21:52 9 believe that's correct.  
04:21:52 10 Q. Have you had any discussions with Dr. Perryman ever?  
04:21:55 11 A. I believe that I have.  
04:21:57 12 Q. Did you tell him, hey, Dr. Perryman, you know, there's  
04:22:00 13 more value to LTE than the baseband? Did you ever explain  
04:22:05 14 that to him?  
04:22:06 15 A. I don't believe that -- I believe that we talked about  
04:22:10 16 specific aspects of LTE, not all of LTE.  
04:22:14 17 MR. SHEASBY: Objection. Move to strike.  
04:22:16 18 Non-responsive.  
04:22:20 19 THE COURT: Overruled.  
04:22:21 20 Q. (By Mr. Sheasby) Did you tell Dr. Perryman that you  
04:22:24 21 have never stated that the value of LTE communications is  
04:22:28 22 represented by the baseband?  
04:22:29 23 A. I don't believe I said those specific words, no.  
04:22:34 24 Q. Now, you didn't conduct your own independent  
04:22:39 25 investigation as to whether Apple's conduct was willful,

04:22:44 1 correct?

04:22:44 2 A. I didn't do a specific investigation into -- into that,

04:22:49 3 no.

04:22:49 4 Q. And you agree that LG, Samsung, and Panasonic launched

04:22:54 5 LTD -- LTE devices before Apple, correct?

04:22:57 6 A. I'm sorry, could you repeat your question?

04:23:02 7 Q. LG, Samsung, and Panasonic launched LTE devices before

04:23:07 8 the iPhone 5 LTE device, correct?

04:23:11 9 A. I believe that is correct.

04:23:12 10 Q. Samsung launched its first LTE device over 24 months

04:23:16 11 before Apple, correct?

04:23:17 12 A. That sounds right.

04:23:19 13 Q. And Panasonic and LG launched their LTE devices

04:23:23 14 approximately 16 months before Apple, correct?

04:23:27 15 A. That sounds about right.

04:23:29 16 MR. SHEASBY: Let's pull up the '003 patent. And

04:23:39 17 if we could have Figure -- let's go to Tables -- is there a

04:23:43 18 PX-0003? The 0003 patent is not anything. Let's pull up

04:23:50 19 the '284 patent, PX-003, and let's go to Tables 3 through

04:24:00 20 8. Keep going. So let's pull up some of these tables.

04:24:19 21 We'll do it one at a time. Table 3.

04:24:22 22 Q. (By Mr. Sheasby) So we're looking at the specification

04:24:24 23 of the '284 patent, correct?

04:24:25 24 A. That is correct.

04:24:25 25 Q. This is a patent that you've analyzed, correct?

04:24:27 1 A. Yes.

04:24:28 2 Q. Now, you believed that the claims of the '284 patent do

04:24:34 3 not cover what's depicted in Table 3, correct?

04:24:38 4 A. That is correct.

04:24:39 5 Q. Okay. So let me -- we have the specification of the

04:24:45 6 '284 patent, correct?

04:24:47 7 A. In this -- yes, this is the specification of the '284

04:24:50 8 patent.

04:24:50 9 Q. And we talked about earlier how you used the

04:24:53 10 specification to understand the claims, correct?

04:24:56 11 A. Yes, and the -- and the file history.

04:24:58 12 Q. And in Table 3, what you see is you see a first set in

04:25:10 13 which the RV is 0, correct?

04:25:18 14 A. There is a -- there is a -- yes, there is a set where

04:25:21 15 RV is 0.

04:25:24 16 Q. And there's a second set where RV is a change number,

04:25:29 17 correct?

04:25:29 18 A. Where RV changes from 0 to 1, 2, and 3.

04:25:35 19 Q. And you believe that's not covered by the claims of the

04:25:39 20 patents, correct?

04:25:40 21 A. That's correct.

04:25:41 22 Q. In fact --

04:25:42 23 MR. SHEASBY: Let's pull that down.

04:25:44 24 Q. (By Mr. Sheasby) And -- oh, by the way, if the jury

04:25:47 25 disagrees with you and the jury concludes that Table 3 is

04:25:51 1 covered by the claims of the patent, then your theory is  
04:25:54 2 incorrect, fair?

04:25:55 3 A. I'm not entirely sure. It depends on what else they  
04:25:59 4 decide, I suppose.

04:26:00 5 Q. Sir, do you know what the consequences are if the jury  
04:26:09 6 determines that Table 3 is covered by the claims?

04:26:11 7 A. I'd have to know what else the jury decided.

04:26:14 8 Q. Sir, Table 3 --

04:26:16 9 MR. SHEASBY: Let's pull that up again.

04:26:18 10 Q. (By Mr. Sheasby) You agree that Table 3 is the same  
04:26:21 11 design as -- a similar design to the LTE standard, correct?

04:26:26 12 A. No.

04:26:27 13 Q. Oh. Okay.

04:26:38 14 MR. SHEASBY: Why don't we turn to PX-3.22?

04:26:51 15 PDX-3.22. So this is a demonstrative, Mr. Huynh. Let's go  
04:26:53 16 to Page 22.

04:26:56 17 Q. (By Mr. Sheasby) So you just told the ladies and  
04:26:58 18 gentlemen of the jury that you don't believe the '284  
04:27:00 19 patent has -- has the same design as the LTE standard,  
04:27:04 20 Table 3, correct?

04:27:05 21 A. Correct.

04:27:06 22 Q. Now, you agree that in the '283 -- '284 patent in  
04:27:18 23 Table 3 there's a TF range, correct?

04:27:20 24 A. In Table 3 there's a TF range.

04:27:23 25 Q. And in that TF range, RV is always 0, correct?

04:27:26 1 A. RV is always 0, that's correct.

04:27:32 2 Q. And there's a second range in which RV changes,

04:27:38 3 correct?

04:27:38 4 A. Correct.

04:27:38 5 Q. And then, in the 3GPP standard, there's a first range

04:27:46 6 in which RV is always 0 correct?

04:27:49 7 A. Correct.

04:27:49 8 Q. And there's a second range in which RV changes,

04:27:52 9 correct?

04:27:52 10 A. Correct.

04:27:52 11 Q. And the range in which RV is 0 is larger than the range

04:27:58 12 in which RV changes, correct?

04:28:00 13 A. That is correct.

04:28:01 14 Q. In fact, you believe --

04:28:02 15 MR. SHEASBY: Let's pull that down.

04:28:03 16 Q. (By Mr. Sheasby) If we go to every single table in the

04:28:06 17 patent --

04:28:07 18 MR. SHEASBY: Let's pull up -- let's go back to

04:28:09 19 PX-003. Let's go to Table 4.

04:28:22 20 Q. (By Mr. Sheasby) Your theory is that Table 4 is not

04:28:26 21 described in the claims of the patent, correct?

04:28:27 22 A. That is correct.

04:28:29 23 MR. SHEASBY: Let's go to Table 5 from the patent.

04:28:32 24 Q. (By Mr. Sheasby) You believe that Table 5 is not

04:28:44 25 disclosed in the claims of the patent, correct?

04:28:47 1 A. Yes, that is correct.

04:28:50 2 MR. SHEASBY: Let's go to Table 6.

04:28:52 3 Q. (By Mr. Sheasby) You believe that Table 6 is not  
04:28:57 4 disclosed in the claims of the patent, correct?

04:29:01 5 A. That's right.

04:29:02 6 MR. SHEASBY: Let's go to Table 7.

04:29:04 7 Q. (By Mr. Sheasby) You believe that Table 7 is not  
04:29:10 8 described in the claims of the patent, correct?

04:29:11 9 A. That is correct.

04:29:18 10 MR. SHEASBY: Let's go to Table 8.

04:29:19 11 Q. (By Mr. Sheasby) You believe that Table 8 is not  
04:29:25 12 disclosed in the claims of the patent, correct?

04:29:27 13 A. That is correct.

04:29:33 14 Q. And in your testimony, I was listening for it, you  
04:29:37 15 don't identify one single table or figure in the patent  
04:29:42 16 that depicts your interpretations of the '284 patent, fair?

04:29:47 17 A. In my testimony, I did not.

04:29:49 18 Q. Okay. The jury is allowed to consider that when they  
04:29:53 19 think about your credibility in the jury room?

04:29:55 20 A. Of course.

04:29:57 21 MR. SHEASBY: Let's go to PDX-3.33.

04:30:05 22 Q. (By Mr. Sheasby) Now, in the patent, the patent  
04:30:24 23 contemplates a first part that is made up of the TF range,  
04:30:28 24 correct?

04:30:28 25 A. That is right. It has a first part that is designated

04:30:34 1 TF range.

04:30:34 2 Q. And the patent contemplates a second range that is made

04:30:38 3 up of -- of the area where the RV range is changing,

04:30:45 4 correct?

04:30:45 5 A. Well, it specifically contemplates a second part that's

04:30:49 6 denoted the "RV range."

04:30:50 7 Q. A first part and a second part, correct?

04:30:54 8 A. Correct.

04:30:54 9 Q. And the second part is smaller than the first part,

04:30:58 10 correct?

04:30:58 11 A. That is correct.

04:31:01 12 Q. And the claims require a first part that is larger than

04:31:05 13 the second part, correct?

04:31:07 14 A. Incorrect.

04:31:09 15 Q. The claims don't require a first subset that is larger

04:31:17 16 than the second subset?

04:31:19 17 A. Subset, yes.

04:31:21 18 Q. Okay. So the claims require a first subset that is

04:31:24 19 larger than the second subset, fair?

04:31:26 20 A. It does, but it requires specific subsets.

04:31:29 21 MR. SHEASBY: Your Honor, I object to the last

04:31:30 22 portion of the question as non-responsive, and I move it to

04:31:34 23 be stricken.

04:31:45 24 THE COURT: I'll sustain that. The answer, "it

04:31:48 25 does," will complete the witness's response. The remainder

04:31:53 1 is struck -- is stricken.

04:31:58 2 Q. (By Mr. Sheasby) Now, you think there's a difference  
04:32:00 3 between a part and a subset, correct?

04:32:04 4 A. Yes.

04:32:08 5 Q. The jury is allowed to consider that when they think  
04:32:13 6 about your credibility in the jury room, correct?

04:32:16 7 A. Yes, they can.

04:32:25 8 Q. Now, the patent inventors actually discussed Table 3 in  
04:32:40 9 their discussions with the Patent Office, correct?

04:32:42 10 MR. MUELLER: Your Honor, before the witness  
04:32:44 11 answers, I just want to note that Mr. Sheasby objected to  
04:32:47 12 my use of the prosecution history. He's now using the  
04:32:50 13 prosecution history.

04:32:50 14 I do intend to get into it, with Your Honor's  
04:32:53 15 permission, on redirect for other reasons, but I think this  
04:32:58 16 is yet another reason why the prosecution history should be  
04:33:04 17 fair game at this point.

04:33:05 18 MR. SHEASBY: I'm happy to respond, Your Honor.  
04:33:05 19 I'm not using the prosecution history to discuss the  
04:33:07 20 history of the claims. I'm using the prosecution history  
04:33:09 21 to discuss -- a statement was made regarding the meaning of  
04:33:13 22 the claim limitation.

04:33:14 23 THE COURT: Well, let's do this, gentlemen.  
04:33:16 24 Mr. Sheasby is going to go forward with his direct and --  
04:33:18 25 or, excuse me, with his cross. And if Mr. Mueller thinks a

04:33:22 1 door has been opened, when he gets up to redirect, he can  
04:33:26 2 raise it with me then.

04:33:27 3 MR. MUELLER: Thank you, Your Honor.

04:33:28 4 MR. SHEASBY: I withdraw the question.

04:33:48 5 Now, let's go to Section -- PDX-3.2.1.

04:34:19 6 PX-3.2.1 -- 21.

04:34:22 7 Q. (By Mr. Sheasby) Now, you felt that the table that  
04:34:32 8 Panasonic proposed to LT -- was different than the table  
04:34:37 9 adopted by LTE, correct?

04:34:39 10 A. Correct.

04:34:39 11 Q. And one of the things you pointed out was that there's  
04:34:48 12 an index used for the TBS, correct?

04:34:50 13 A. Correct.

04:34:51 14 Q. Now, did you discuss with the ladies and gentlemen of  
04:34:53 15 the jury whether the patent proposes the use of an index  
04:34:58 16 associated with TBS?

04:35:00 17 A. Are you talking about the patent or the --

04:35:04 18 Q. Yes, sir.

04:35:04 19 A. -- proposal?

04:35:04 20 Q. I'm talking about the patent.

04:35:07 21 A. Oh, the patent. No, I did not.

04:35:08 22 Q. The patent actually proposes the use of an index  
04:35:14 23 associated with TBS, correct?

04:35:15 24 A. The patent proposes a formula that uses -- uses TB -- I  
04:35:22 25 believe it does. I believe it does.

04:35:23 1 Q. The patent literally uses the word "index."

04:35:26 2 A. Yes, it does.

04:35:27 3 Q. Okay. Now, you also said that there was a difference

04:35:37 4 because the Panasonic proposal includes these NDI and

04:35:41 5 ranges, correct?

04:35:41 6 A. Correct.

04:35:53 7 MR. SHEASBY: Now, why don't we go to PDX-3.23.

04:35:59 8 Q. (By Mr. Sheasby) The patent talks about a TBS range

04:36:08 9 and an RV range, correct?

04:36:09 10 A. The patent does, yes.

04:36:11 11 Q. And the patent claim says comprising, correct?

04:36:19 12 A. Yes, it does.

04:36:20 13 Q. And "comprising" means that you can have more than

04:36:23 14 what's recited. You just need to have at least what is

04:36:27 15 recited, fair?

04:36:28 16 A. Fair.

04:36:30 17 MR. SHEASBY: And so let's go back to PDX-3.21.

04:36:36 18 Q. (By Mr. Sheasby) The patent doesn't exclude the use of

04:36:43 19 an NDI and a range, correct?

04:36:46 20 A. The patent does not.

04:36:47 21 Q. The patent emphasizes that what you must have is TF and

04:36:53 22 RV, fair?

04:36:56 23 A. Correct.

04:36:57 24 Q. Now, you don't identify any reference or design

04:37:09 25 anywhere in the world that anticipates the '284 patent,

04:37:12 1 correct?

04:37:12 2 A. That anticipates? No.

04:37:14 3 Q. The patent is entitled to a presumption of validity,

04:37:19 4 correct?

04:37:19 5 A. It is, correct.

04:37:22 6 Q. Your burden of proof is clear and convincing evidence,

04:37:26 7 correct?

04:37:26 8 A. That is correct.

04:37:27 9 Q. You don't identify any reference anywhere in the world

04:37:31 10 that discloses joint encoding of TF and RV, correct?

04:37:36 11 A. Today or in my report?

04:37:38 12 Q. In your report, sir.

04:37:40 13 A. Yes, I did.

04:37:41 14 Q. Let me ask it -- let me withdraw the question.

04:37:44 15 In your testimony today under oath before the

04:37:46 16 jury, do you identify any reference that discloses the

04:37:49 17 combination of TF and RV through joint encoding?

04:37:53 18 A. Not specifically through joint encoding.

04:37:59 19 Q. So for the ladies and gentlemen of the jury, we agree

04:38:01 20 that one of the limitation in the claim -- it's

04:38:08 21 Limitation 4 --

04:38:09 22 THE COURT: Slow down, Mr. Sheasby, please.

04:38:11 23 MR. SHEASBY: Yes.

04:38:12 24 Q. (By Mr. Sheasby) One of the limitations in the claim

04:38:17 25 requires joint encoding, correct?

04:38:19 1 A. That is correct.

04:38:20 2 Q. You checked the box for joint encoding, correct?

04:38:25 3 A. Yes, we did.

04:38:26 4 Q. But the reality is -- is that the references you

04:38:28 5 presented to the jury do not disclose joint encoding of TF

04:38:33 6 and RV, correct?

04:38:34 7 A. Correct, but I'd like to explain, if I could.

04:38:41 8 THE COURT: Mr. Mueller will get a chance to ask

04:38:43 9 you follow-up questions later.

04:38:45 10 THE WITNESS: Okay.

04:38:46 11 THE COURT: You need to respond to questions asked

04:38:49 12 by Mr. Sheasby at this point.

04:38:50 13 THE WITNESS: Okay. Thank you.

04:38:51 14 Q. (By Mr. Sheasby) You think it would be obvious to --

04:38:53 15 to jointly encode TF and RV, correct?

04:38:57 16 A. Correct.

04:38:57 17 Q. You've never participated in an LTE working group,

04:39:00 18 correct?

04:39:00 19 A. Correct.

04:39:01 20 Q. Had no role whatsoever in constructing LTE, correct?

04:39:04 21 A. That is correct.

04:39:06 22 MR. SHEASBY: I pass the witness.

04:39:07 23 THE COURT: Redirect by the Defendant.

04:39:13 24 MR. MUELLER: Yes, please, Your Honor.

04:39:17 25 THE COURT: Unless you're going to use that

04:39:19 1 demonstrative in redirect, Mr. Sheasby needs to take it  
04:39:23 2 down.

04:39:23 3 MR. MUELLER: I'll take it down.

04:39:27 4 MR. SHEASBY: I'm sorry, Mr. Mueller.

04:39:29 5 MR. MUELLER: That's fine.

04:39:30 6 THE COURT: All right. Let's proceed with  
04:39:31 7 redirect examination by the Defendant.

04:39:33 8 MR. MUELLER: Thank you -- thank you, Your Honor.

04:39:33 9 REDIRECT EXAMINATION

04:39:33 10 BY MR. MUELLER:

04:39:34 11 Q. Dr. Buehrer?

04:39:35 12 A. Yes.

04:39:36 13 Q. First I want to ask you about willfulness, which  
04:39:39 14 Mr. Sheasby raised. Do you recall that?

04:39:40 15 A. I do.

04:39:41 16 Q. Now, he mentioned that Samsung, LG, and Panasonic had  
04:39:46 17 released LTE devices before Apple. Do you recall that,  
04:39:49 18 sir?

04:39:49 19 A. Yes, I do.

04:39:50 20 Q. Have you seen any evidence in this case that Samsung,  
04:39:55 21 LG, or Panasonic contacted Apple about these patents?

04:39:59 22 MR. SHEASBY: Your Honor, objection. This is  
04:40:02 23 subject to a motion in limine.

04:40:04 24 THE COURT: I understand. We've discussed this.  
04:40:06 25 I've given leave to ask this question. Your objection is

04:40:09 1 overruled.

04:40:09 2 MR. SHEASBY: Your Honor, I believe that this was  
04:40:11 3 given as to Mr. Blevins, not as to the experts. This -- he  
04:40:15 4 has no personal knowledge of this subject whatsoever.

04:40:17 5 MR. MUELLER: Your Honor, Mr. Sheasby raised  
04:40:19 6 willfulness. I'm asking whether he's seen any evidence as  
04:40:22 7 part of his work on this case. It's about willfulness.  
04:40:25 8 It's a question that goes directly to willfulness, which  
04:40:27 9 Mr. Sheasby just raised.

04:40:29 10 MR. SHEASBY: I believe the Court gave them leave  
04:40:31 11 to go into this with Mr. Blevins where I could have  
04:40:34 12 examined him. This witness has no personal knowledge of  
04:40:37 13 this whatsoever.

04:40:39 14 MR. MUELLER: Your Honor, again, this is a subject  
04:40:41 15 that --

04:40:42 16 THE COURT: It was discussed that it was going to  
04:40:45 17 be with your corporate representative, Mr. Mueller.

04:40:47 18 MR. MUELLER: Your Honor, this is the subject that  
04:40:50 19 Mr. Sheasby raised and just tried to draw an implication  
04:40:54 20 that Samsung, LG, and Panasonic released products earlier  
04:40:58 21 and, therefore, Apple is willfully infringing. It was  
04:41:01 22 introduced under the guise of willfulness.

04:41:03 23 Whether they actually contacted Apple is a  
04:41:06 24 relevant fact, and Dr. Buehrer has conducted an analysis of  
04:41:10 25 willfulness in this case. I'd like to ask him that one

04:41:12 1 question.

04:41:15 2 MR. SHEASBY: Your Honor, may I be heard, or have  
04:41:17 3 you heard enough?

04:41:18 4 THE COURT: You're asserting an order in limine,  
04:41:21 5 Mr. Sheasby?

04:41:23 6 MR. SHEASBY: Yes. It's Motion in Limine No. --  
04:41:25 7 it's the last motion in limine on our motions in limine. I  
04:41:28 8 believe it's 14, Your Honor.

04:41:37 9 THE COURT: Yes.

04:41:42 10 MR. MUELLER: And, Your Honor, I would say the  
04:41:45 11 door, again, is opened by what Mr. Sheasby just did. Fair  
04:41:51 12 rebuttal to his point to the jury is whether those  
04:41:54 13 companies actually contacted Apple about these patents.

04:42:06 14 THE COURT: Well, he's not Apple, Mr. Mueller, and  
04:42:09 15 he's not going to know what did or didn't happen with Apple  
04:42:13 16 unless somebody at Apple tells him that by way of some  
04:42:18 17 hearsay statement.

04:42:18 18 MR. MUELLER: My only question, Your Honor, would  
04:42:20 19 be: Have you seen any evidence that Panasonic, Samsung,  
04:42:22 20 and LG contacted Apple? Has he seen any evidence is my  
04:42:27 21 only question.

04:42:27 22 THE COURT: In his role as an expert in this case?

04:42:29 23 MR. MUELLER: Yes.

04:42:30 24 THE COURT: With that clarification, I'll allow  
04:42:32 25 that one question.

04:42:32 1 MR. MUELLER: Thank you, Your Honor.

04:42:33 2 Q. (By Mr. Mueller) Dr. Buehrer, in your role as an

04:42:35 3 expert in this case, have you seen any evidence that

04:42:43 4 Samsung, Panasonic, or LG ever contacted Apple about the

04:42:49 5 patents in this case?

04:42:50 6 A. No, I have not.

04:42:52 7 Q. Now, Mr. Sheasby asked you about the tables in the

04:42:58 8 patent, right, sir?

04:42:59 9 A. Correct.

04:43:00 10 Q. Those tables, were they in the original patent

04:43:03 11 application or not in the original patent application?

04:43:06 12 A. They were in the original application.

04:43:08 13 Q. And so when Samsung -- I'm sorry, Panasonic first

04:43:11 14 applied for the '284 patent, were those tables in the

04:43:15 15 original patent application or not?

04:43:17 16 A. Yes, they were.

04:43:20 17 MR. MUELLER: Your Honor, at this point I would

04:43:22 18 request leave to inquire into the prosecution history,

04:43:24 19 which goes to the issue of why the claims that are being

04:43:27 20 asserted don't cover those tables.

04:43:31 21 THE COURT: What's the Plaintiffs' response?

04:43:33 22 MR. SHEASBY: Your Honor, first off, this is

04:43:35 23 outside of the scope of -- of cross-examination. I never

04:43:39 24 referenced whatsoever to these tables. The tables were in

04:43:43 25 the patents that were discussed in the direct examination.

04:43:45 1                 THE COURT: Rule 40 -- excuse me. Rule 611  
04:43:48 2 doesn't talk about the scope of cross. It talks about the  
04:43:51 3 scope of direct.

04:43:52 4                 MR. SHEASBY: Your Honor, then it's the same  
04:43:53 5 objection. I believe what he's trying to do is discuss the  
04:43:56 6 claim history of the patents, which is a subject for this  
04:43:59 7 Court. It's not a subject for the jury.

04:44:01 8                 MR. MUELLER: That's incorrect, Your Honor. And  
04:44:03 9 the suggestion to the jury was explicitly that they  
04:44:06 10 consider Dr. Buehrer to have less credibility. That was  
04:44:09 11 the explicit argument by Mr. Sheasby, because the claims  
04:44:12 12 don't cover the tables.

04:44:13 13                 The reason they don't cover the tables is because  
04:44:16 14 of how the claims were amended during the prosecution  
04:44:19 15 history, and that's what I'd like to inquire into.

04:44:22 16                 MR. SHEASBY: Your Honor, that is an absolutely  
04:44:24 17 inappropriate use of the prosecution history. Counsel just  
04:44:28 18 tried to get in evidence through his argument that --

04:44:28 19                 THE COURT: All right. I've heard enough,  
04:44:33 20 gentlemen. I'm going to sustain this objection. I don't  
04:44:35 21 think the door has been completely opened here.

04:44:38 22 Q. (By Mr. Mueller) Dr. Buehrer, just focusing on the  
04:44:41 23 claims themselves --

04:44:43 24                 MR. MUELLER: And, Your Honor, can I put the  
04:44:46 25 placard up?

04:44:47 1 THE COURT: Certainly.

04:44:48 2 Q. (By Mr. Mueller) This is Claim 1 in the final  
04:44:50 3 as-issued patent, right?

04:44:52 4 A. Correct.

04:44:52 5 Q. And just focusing on the claim language in the final  
04:44:56 6 as-issued patent, why does this language not cover those  
04:45:00 7 tables that Mr. Sheasby took you through?

04:45:03 8 A. Because -- now, it's important to understand that we  
04:45:08 9 have to go by the claims. The claims require two subsets,  
04:45:14 10 and those subsets are very clearly defined. They're  
04:45:19 11 clearly defined as being -- the first subset is a range of  
04:45:24 12 values reserved for -- reserved for indicating transport  
04:45:28 13 format --

04:45:28 14 Q. And let me pause you, Dr. Buehrer.

04:45:31 15 MR. MUELLER: Your Honor, may I switch the  
04:45:34 16 placards and put another one up?

04:45:36 17 THE COURT: You may.

04:45:37 18 Q. (By Mr. Mueller) This may be helpful, Dr. Buehrer.  
04:45:40 19 Why don't you use this, and please continue. I'm sorry to  
04:45:43 20 interrupt.

04:45:43 21 A. Okay. So the claims require two subsets that are  
04:45:46 22 specifically defined. The first subset is a set of values  
04:45:49 23 reserved for indicating transport format. The second  
04:45:52 24 subset is a set of values reserved for indicating  
04:45:56 25 redundancy version.

04:45:57 1           When we look at the claims -- or when we look at  
04:46:01 2 those tables that we were talking about, they don't follow  
04:46:04 3 that. They don't have two subset -- well, I'm sorry --  
04:46:08 4 they do have two subsets that follow that, but when we go  
04:46:12 5 to the very last limitation, the size of the first subset  
04:46:15 6 is not larger than the size of the second subset.

04:46:20 7 Q. And so we have the blue here. Is that the first  
04:46:24 8 subset?

04:46:24 9 A. Correct.

04:46:24 10 Q. Red is the second subset?

04:46:27 11 A. Correct.

04:46:27 12 Q. And this is the actual LTE standard on the right here?

04:46:29 13 A. Correct.

04:46:31 14 Q. Not a table from the patent, right?

04:46:34 15 A. That's right.

04:46:34 16 Q. How do these two subsets in the actual LTE standard  
04:46:38 17 compare to the as-issued claims of the '284 patent?

04:46:41 18 A. They do not match the requirements of the '284 -- Claim  
04:46:48 19 1 of the '284 patent.

04:46:50 20 Q. Final few questions, Dr. Buehrer. Mr. Sheasby asked a  
04:46:55 21 few times if the jury could understand some issue with  
04:46:57 22 respect to your credibility --

04:46:57 23           THE COURT: Slow down, Mr. Mueller.

04:47:01 24           MR. MUELLER: Apologize, Your Honor.

04:47:02 25 Q. (By Mr. Mueller) Mr. Sheasby asked you several times

04:47:05 1 whether the jury could consider some issue with respect to  
04:47:08 2 your credibility. Do you recall that?

04:47:08 3 A. I do.

04:47:09 4 Q. And your independence; do you recall that?

04:47:11 5 A. I do.

04:47:12 6 Q. Sir, are you here as an independent expert?

04:47:15 7 A. I absolutely am.

04:47:16 8 MR. SHEASBY: Your Honor, objection. Leading.

04:47:19 9 THE COURT: It is leading.

04:47:21 10 Restate your question.

04:47:22 11 Q. (By Mr. Mueller) Are you here as an independent expert  
04:47:25 12 or a non-independent expert?

04:47:26 13 A. I'm here as an independent expert.

04:47:32 14 Q. What, in very brief summary, are your qualifications to  
04:47:36 15 be an expert in this case with respect to the '284 patent?

04:47:38 16 A. I have been researching and studying wireless  
04:47:41 17 communications for over 25 years. I have been -- I have  
04:47:47 18 studied the LTE standard substantially, and I  
04:47:52 19 understand very -- I am an expert in wireless  
04:47:54 20 communications.

04:47:55 21 Q. Now, with respect to invalidity, which Mr. Sheasby  
04:47:58 22 asked you about, do you have that subject in mind?

04:48:03 23 A. Yes.

04:48:03 24 Q. What were you describing to the jury today?

04:48:04 25 A. I was describing --

04:48:07 1 MR. SHEASBY: Your Honor, object. That calls for  
04:48:09 2 a narrative.

04:48:10 3 THE COURT: Overruled.

04:48:14 4 Restate the question, Mr. Mueller.

04:48:18 5 MR. MUELLER: Yes.

04:48:18 6 Q. (By Mr. Mueller) What was the core of the invalidity  
04:48:21 7 opinion that you presented to the ladies and gentlemen of  
04:48:23 8 the jury today?

04:48:23 9 A. My opinion is that if you use the infringement theory  
04:48:28 10 of the Plaintiffs, then the claims would be invalid.

04:48:32 11 Q. Now, were you criticizing the Patent Office in that  
04:48:36 12 theory?

04:48:36 13 A. No, I was not.

04:48:37 14 Q. What were you doing?

04:48:38 15 A. I was saying -- I was not saying that the patent --  
04:48:43 16 that the patent is invalid when properly interpreted -- oh,  
04:48:48 17 I'm sorry -- when properly applied, excuse me.

04:48:50 18 Q. And, sir, when properly applied, is this patent  
04:48:55 19 infringed by Apple?

04:48:56 20 A. No.

04:48:57 21 MR. MUELLER: No further questions. I pass the  
04:48:59 22 witness, Your Honor.

04:48:59 23 THE COURT: All right. Additional  
04:49:01 24 cross-examination, Mr. Sheasby?

04:49:03 25 MR. SHEASBY: Just two questions.

04:49:05 1 Q. (By Mr. Sheasby) Mr. Mueller --

04:49:05 2 THE COURT: Just a minute, let him take the  
04:49:07 3 demonstratives down.

04:49:17 4 All right. Proceed with your cross-examination.

04:49:17 5 RECROSS-EXAMINATION

04:49:20 6 BY MR. SHEASBY:

04:49:20 7 Q. Mr. Mueller asked you a question of have you ever --  
04:49:23 8 did you know if Samsung, Panasonic, and LG had approached  
04:49:29 9 Apple regarding your patents, correct? Regarding any of  
04:49:32 10 these patents, correct?

04:49:34 11 A. Correct.

04:49:34 12 Q. How many hours did you spend with Apple's lawyers over  
04:49:39 13 the course of this case?

04:49:39 14 A. I don't believe I met with Apple's -- which -- the --

04:49:47 15 Q. They're sitting right there, sir.

04:49:49 16 A. Oh, I don't know how many hours I spent with them.

04:49:52 17 Q. Give me an estimate.

04:49:55 18 A. It's not something I track. I don't -- I couldn't say.

04:49:58 19 Q. Did you ever say to Apple, you know what, I want to  
04:50:01 20 look in your records to see if LG, Panasonic, and Samsung  
04:50:05 21 ever approached you?

04:50:06 22 A. I did not say that.

04:50:08 23 Q. Did you say, you know what, I want to talk to your  
04:50:11 24 licensing executives to see if Samsung, LTE [sic] and  
04:50:16 25 Panasonic ever approached you; did you do that?

04:50:19 1 A. No.

04:50:19 2 Q. Now, you've worked for Apple eight times over the last

04:50:27 3 six years?

04:50:28 4 A. Correct.

04:50:28 5 Q. Are there people with your qualifications that haven't

04:50:33 6 worked for Apple eight times over the last six years and

04:50:35 7 been paid \$760,000 who could do the analysis you just did?

04:50:36 8 A. I suppose there probably are.

04:50:39 9 Q. Thank you.

04:50:40 10 THE COURT: You pass the witness, Mr. Sheasby?

04:50:41 11 MR. SHEASBY: I pass the witness, Your Honor.

04:50:42 12 THE COURT: Is there redirect, Mr. Mueller?

04:50:44 13 MR. MUELLER: No, Your Honor. Thank you.

04:50:46 14 THE COURT: All right, Dr. Buehrer. You may step

04:50:48 15 down.

04:50:48 16 THE WITNESS: Thank you.

04:50:53 17 MR. SHEASBY: Your Honor, with your permission,

04:50:56 18 may we clear binders before the next witness?

04:50:59 19 THE COURT: You may clear binders.

04:51:33 20 Ladies and gentlemen of the jury, we're going to

04:51:37 21 stop for the day. The next witness is going to be lengthy.

04:51:42 22 We're at 5:00 o'clock now, give or take. And, quite

04:51:47 23 honestly, I think it's appropriate that we use this point

04:51:51 24 in time to recess for the day.

04:51:53 25 So as you leave the courtroom in a minute, take

04:51:58 1 your notebooks with you and leave them on the table in the  
04:52:01 2 jury room.

04:52:02 3 Follow all the instructions that I've given you  
04:52:05 4 that I trust you've continued to follow, including not to  
04:52:08 5 discuss the case with anyone in any way, including the  
04:52:11 6 eight of yourselves.

04:52:13 7 I'd like to start as close to 8:30 as I can in the  
04:52:16 8 morning. One of these days we're going to get to start at  
04:52:20 9 8:30, if you'll just continue to try and help me.

04:52:23 10 And have a safe evenings at your homes, travel  
04:52:27 11 carefully and safely, and I will see you in the morning.  
04:52:31 12 You're excused at this time.

04:52:32 13 COURT SECURITY OFFICER: All rise.

04:52:43 14 (Jury out.)

04:52:44 15 THE COURT: Be seated, please.

04:52:56 16 Counsel, according to my calculations, a total of  
04:53:09 17 6 hours and 14 minutes and 15 seconds was used in the trial  
04:53:16 18 today.

04:53:17 19 The Plaintiff has used 10 hours and 40 minutes,  
04:53:24 20 and has 2 hours and 20 minutes remaining.

04:53:28 21 The Defendant has used 9 hours and 46 minutes, and  
04:53:32 22 has 3 hours and 14 minutes remaining with regard to  
04:53:39 23 allocated time for trial that I gave you at pre-trial.

04:53:42 24 Also, without naming names, there are support  
04:53:47 25 staff people who continue to pester my law clerks during

04:53:51 1 recesses about how long was this, how much time did you  
04:53:55 2 allocate to this, how did you arrive at this much time for  
04:54:00 3 that.

04:54:01 4 I am keeping the time. I am sure you all have  
04:54:03 5 your own timekeepers to check things out there. But the  
04:54:03 6 time I give you is the time that counts.

04:54:08 7 And, you know, you're welcome to periodically  
04:54:10 8 check, but I don't need inquiries constantly as to every  
04:54:15 9 item in the day as to how it was scored time-wise. That's  
04:54:19 10 not helpful. So please refrain from that.

04:54:24 11 I will expect you to read into the record tomorrow  
04:54:29 12 morning the items from the list of pre-admitted exhibits  
04:54:33 13 used during today's portion of the trial. I will expect  
04:54:36 14 you to meet and confer on it overnight. I will expect you  
04:54:38 15 to resolve any disputes about it overnight.

04:54:42 16 If despite Herculean efforts on your part you  
04:54:46 17 cannot, then I'll talk with you about it in the morning. I  
04:54:50 18 will be in chambers by 7:30.

04:54:54 19 Again, you are to support the status of any  
04:54:56 20 overnight disputes to my staff by email by 10:00 p.m., not  
04:55:01 21 11:30, not midnight. You are to continue to meet and  
04:55:05 22 confer on those disputes until you deliver a notebook to  
04:55:09 23 chambers at 7:00 a.m. tomorrow morning that has any  
04:55:13 24 disputed demonstratives or other tangible documents in it  
04:55:17 25 and a succinct paragraph from each side as to that document

04:55:22 1 showing the basis for each party's position.

04:55:25 2 Documents that are not in dispute are not to be  
04:55:28 3 included. And 6-, 8-, or 10-page -- excuse me, inches of  
04:55:34 4 paper in a three-ring binder like I got yesterday are no  
04:55:39 5 more helpful than the zero I got this morning.

04:55:42 6 You're going to get this process right or, as I  
04:55:45 7 told you in chambers, I'm going to sanction you. It's a  
04:55:48 8 waste of my time. It's a waste of my staff's time. And it  
04:55:54 9 keeps us from starting this trial, as I've told this jury I  
04:55:57 10 intend to, by 7:30 -- by 8:30 every morning.

04:56:01 11 I don't know how to make my position any clearer.  
04:56:05 12 I'm going to carefully look at what comes in tonight and  
04:56:09 13 tomorrow morning.

04:56:10 14 I expect you to comply with the procedures that  
04:56:12 15 I've given you. They're known to you. They've been used  
04:56:16 16 by me for years.

04:56:17 17 Both -- both sides have tried multiple cases  
04:56:19 18 before me. This is no surprise. This is nothing new. You  
04:56:23 19 are going to do it the way you know you are supposed to do  
04:56:27 20 it.

04:56:28 21 Are there questions from either Plaintiff or  
04:56:34 22 Defendant at this juncture?

04:56:35 23 MR. SHEASBY: Nothing for Plaintiffs, Your Honor.

04:56:38 24 MR. MUELLER: No, Your Honor.

04:56:40 25 THE COURT: All right. I will see you in the

04:56:42 1 morning.

04:56:42 2 We stand in recess for the evening.

04:56:45 3 COURT SECURITY OFFICER: All rise.

04:56:46 4 (Recess.)

05:05:54 5

05:05:54 6 CERTIFICATION

7

8 I HEREBY CERTIFY that the foregoing is a true and  
9 correct transcript from the stenographic notes of the  
10 proceedings in the above-entitled matter to the best of my  
11 ability.

12

13

14 /S/ Shelly Holmes \_\_\_\_\_  
15 SHELLY HOLMES, CSR, TCRR  
OFFICIAL REPORTER  
State of Texas No.: 7804  
16 Expiration Date: 12/31/2020

8/6/2020  
Date

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